

MAY 1972

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magazine

15p

MONTHLY



IN
THIS
ISSUE

Modelling a wargames Medieval Town
Airbrush techniques ; Leopard AA Tank



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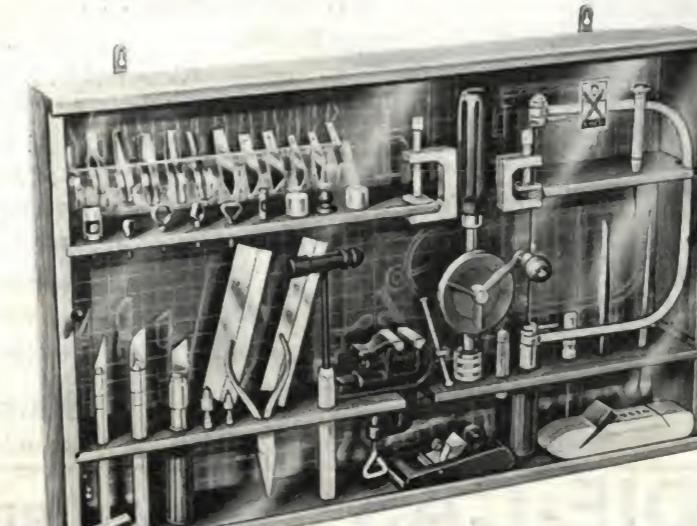
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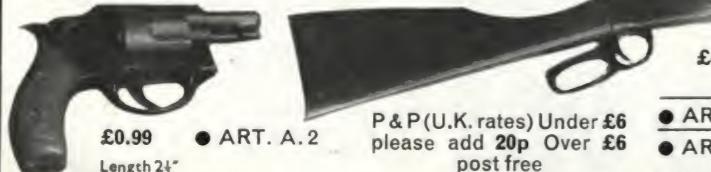
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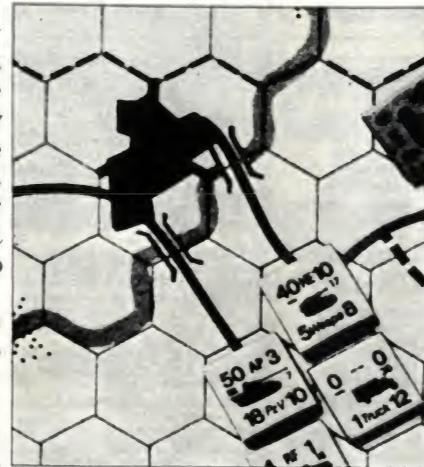
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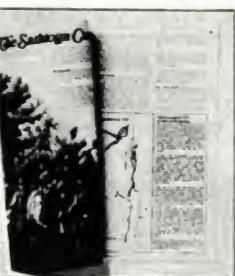
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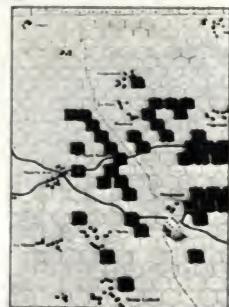
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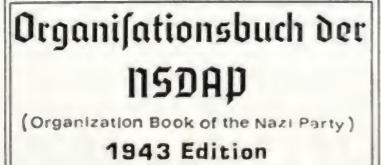
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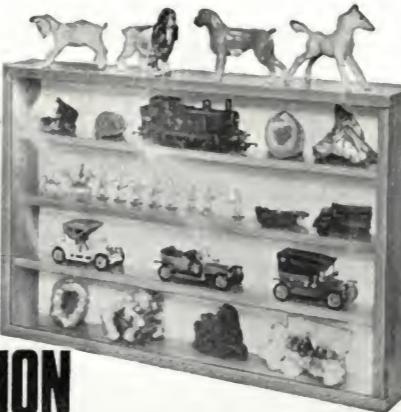
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AIRFIX

magazine

FOR PLASTIC MODELLERS

Volume 13 No 9

May 1972

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Cover Picture

One of the aircraft which did most to popularise light plane ownership in the early 1930s was the celebrated DH60, De Havilland Moth, fore-runner of the Tiger Moth and the aircraft in which Amy Johnson made her record flight to Australia. The Amy Johnson Moth survives (in the Science Museum, London), as do a few others. The particular machine shown, G-EBRI, was owned in the 1930s by the Duchess of Bedford and was the DH60X model. It had a top speed of about 100 mph, a span of 30 feet, and a length of 23 feet 1 inch.

(Photograph by B. Baker from an original painting by R. H. Williams)

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One of No 98 Squadron's Canberras used for high level calibration of radio and radar aids under the Inspectorate of Radio Services task.

IN THE AIR

by Alan W Hall

A PART from housing No 231 Operational Conversion Unit for Canberra aircraft and No 360 Sqn, RAF Cottesmore, Rutland, is the home of two squadrons which have very specialised duties to perform. Nos 115 and 98 Squadrons are used to calibrate the RAF signals facilities throughout the world.

I recently visited this station to see some of the work of the low-level calibration work being done by No 115 Squadron, who have eight Argosy E1s.

The particular task set for the day of my visit was to check the precision approach radar at No 3 FTS Leeming and we set off early in the morning in Argosy XN814, complete with the calibration team which consisted of a theodolite party of three and a number of specialist flight checking personnel from No 90 (Signals) Group.

Right: This Argosy E1 flies low over the theodolite party, on the end of Leeming's 22 runway, exactly down the centre line. Visual observations are used to check the accuracy of radio and radar aids by No 90 Group specialists.

Below: Argosy E1 differs little in external appearance from the standard C1 version. Additional aerials for the mass of electronic equipment stowed inside the fuselage are mounted on the nose and under the fuselage.



After a short delay for the weather—ten miles visibility is essential for this type of calibration work—the theodolite party set up their instruments and a UHF transmitter/receiver at the end of Leeming's 22 runway and the 90 Group specialists went to the air traffic control building to work on the PAR consoles. Radio communications between each party and the aircraft were established and the Argosy took-off to start a series of wide circuits under radar control.

Accurate flying is essential in these operations. The Argosy pilot had to fly to within a few feet of the directions given to him by the PAR operators. The approach to the runway was monitored by the theodolite team from about ten miles range and results compared. In this way it was easy to establish exactly how accurate the radar instructions were.

Variations of a few feet are critical in this type of approach as it is essential for the radar controller to be able to bring an aircraft in near zero visibility conditions right on to the end of the active runway. A small matter of half a degree out will probably land the aircraft, which may be low on fuel, on the grass instead of the runway and therefore great importance is attached to precision at every stage of the exercise.

For my part I flew with the Argosy crew for the first three or four circuits. Constant flight path corrections from the ground made flying difficult and the pilot had to avoid overcorrection as the three degree approach path was followed. Later I saw the same operations from the ground, both on the runway and in the tower.

Leeming's PAR had just been serviced and therefore the local-based controllers needed to know if its accuracy was up to the standards required. The check lasted over two hours and I was told that a further visit would be necessary to check the alignment on Leeming's other runways.

No 115 Squadron does not confine itself to checking radar facilities. They are part of the Inspectorate of Radio Services. IRIS for short, which is operated by RAF Strike Command.



The complicated electronics used by the Services for communications and navigation need constant checking on a world-wide basis and both No 98s Canberras and No 115s Argosy aircraft are engaged throughout the year in maintaining the high standard of everything from a navigational beacon to a telephone exchange.

IRIS has been in existence for just over 25 years. It was originated to improve ground-to-air signals but today has a much wider task. The AOC, No 90 (Signals) Group is responsible for the inspection of radio services, but the day-to-day running of the unit is under the command of the Head of the Inspectorate of Radio Services, Group Captain J. Matthews. He is responsible for the planning of operations and the subsequent preparation and writing of reports on the tasks performed at each of the radio facilities inspected. 'Each report has to be short, sharp and to the point,' he says. 'Additionally they must be meaningful and an aid to the Station being inspected.'

Top of page: No 115 Squadron's insignia appears on the tail unit of this Argosy E1. XN814. It consists of a yellow and blue shape with the Roman numerals 'CXV' superimposed in black.



May 1972

Left and right: Unusual Hercules. Seen at Mildenhall recently was this C-130 of the 37th TAS which has a new radar bulge on the top of the fuselage aft of the cockpit area and an unusual serial scheme. The 'USAF 37786' is additional to the large unit marking 'LN' and the enlarged '786' beneath it (S. G. Richards photos).



Above: British Aircraft Corporation's Warton Strikemaster production line. Seen in the foreground is one of the Mk 88 aircraft destined for New Zealand. Previously the line has been devoted to the production of more than 100 Jet Provost T Mk 5s for the RAF. New Zealand has ten Strikemasters on order.

More A-7D Squadrons for USAF

THREE more USAF squadrons, which form the 18th Tactical Fighter Wing based at Kadena, Okinawa, are to receive the A-7D fighter-bomber aircraft it was announced recently.

Two of the squadrons, the 44th and the 67th, are at present equipped with Phantoms, whilst the other, the 12th TFS, at present has Thunderchiefs.

A USAF statement said that the Vought A-7Ds will be employed in the non-nuclear tactical fighter role and that 62-74 aircraft will equip the Wing. In addition to the Kadena Wing, A-7Ds equip squadrons at Myrtle Beach AFB, South Carolina, and Davis Monthan AFB, Arizona. The changeover to A-7Ds will be completed by early 1973.

Over Subscribed

WHEN I wrote in the November 1971 issue of *Airfix Magazine* about the German group of enthusiasts led by Herr H. H. Lohse of Elmshorn, who had unearthed a Messerschmitt Bf 110 from a nearby swamp, I did not realise the considerable interest that this find might create. Herr Lohse offered parts of the aircraft, which had authentic Luftwaffe camouflage paint chips on them, for sale.

Unfortunately, there was only a limited amount of material available and letters have continued to pour in from all parts of the world at a steady rate. Many hundreds of enthusiasts wrote to Germany hoping to obtain parts of the authentic colours—they came from the United States, all over Europe, Japan and even Australia and South Africa.

Now Herr Lohse tells me he has been unable to cope with the correspondence as he does not speak English, and, apart from this language, he has had letters from many other parts of the world, all in their native tongues. The cost of translations has exceeded the price of the parts available and this, plus postage, has ruled out the project on economic grounds.

Both Herr Lohse and I apologise to the many enthusiasts who have been disappointed.

Helicopter and Glider Preserved

THE Northern Aircraft Preservation Society have recently acquired two new and unusual aircraft for their growing

Continued on page 521



481

How to play a Napoleonic Wargame

Basic guide for the novice or would-be wargamer

by Charles Reavley

OVER the past few months a number of people have asked me basic questions which have made me realise that playing a wargame is not as simple as I had thought. I now see that after having played over a period of 25 years I take a lot for granted which a beginner has difficulty in appreciating. I am therefore going to explain in comparatively few words how I play a Napoleonic game. I hope by this means to help beginners to understand how to play, and perhaps to encourage some newcomers into the hobby. I shall give few reasons for how I play as the aim is to keep the article short, but the rules are logical, historically based, and playable.

I start off a game by setting out a model terrain. I use a landscape that is terraced because this ensures that all surfaces are flat, and so figures will stand up on it easily. Because I usually work from an Ordnance Survey map, my terraces correspond in plan with the 50 feet contours shown on such maps. The contours are not in scale with the horizontal scale or with the 20 mm figures I normally play with. It is easier to produce them either from ceiling tiles or

hardboard, one thickness of either for each 50 feet contour.

Next we decide how many troops we are going to have, where they are going to be on the table, and which side of the table we will play on. For a game which you only want to last three or four hours, then use about 100 figures for each player. The number of troops in use can be increased without increasing the time taken to move them by mounting more than one figure on a base. If you are refighting a historical battle or fighting on the table an incident from a map you are playing a campaign on, then these decisions are taken for you. It is at this stage that opponents must agree how long in terms of time or game cycles they are going to play, and what constitutes a victory. This can be a physical objective such as a town or hill, or a certain percentage of losses suffered by one side before the other. It could also be a defender holding up an attacker for a number of game cycles.

All my figures are made up into units. A battalion of infantry is represented by 12 figures; a squadron of cavalry by 6 mounted figures; and a battery of foot

artillery by 1 gun, 1 limber, 2 gunners, 1 driver, and 4 horses. I will explain why these numbers are used later in the article as it is an important point.

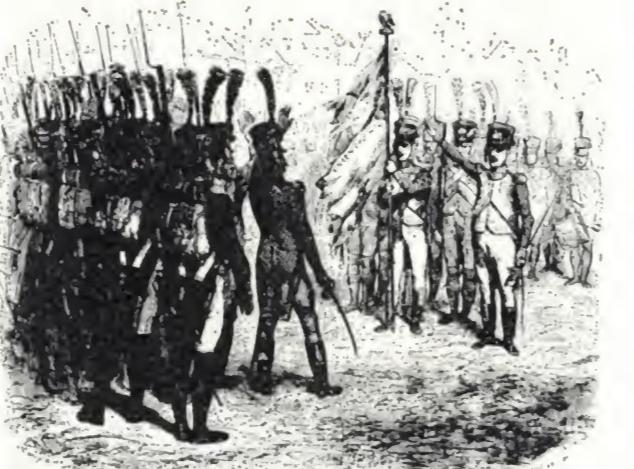
The commanders, ie, the people actually playing the game, at this stage write down the objectives for each of the command formations into which their units are organised. A formation is a number of units grouped together during the game under command of a figure on the table who represents a general. An objective can be physical or enemy units previously sighted. An example of a physical objective is: '1st Infantry Brigade will take and hold West Hill'. An example of the latter type of order is: 2nd Cavalry Division will destroy the enemy units south of the river Wey, and then fall back into Corps Reserve at Smalltown'.

Each side now places their units in position on the table. Those units which the opposing side cannot see because of contours, etc, are not put on the table.

We are now ready to play. Each commander writes down the orders for one game cycle for each unit under his command. These orders state whether a unit will move, which tactical formation it will move in, and in the case of artillery; which type of projectile it will load with and at which range it will commence firing.

The game cycle proceeds in the following sequence:

- 1 Write orders for each unit.
- 2 Move all units for which orders have been written. This idea of moving every unit under one's command confuses some newcomers who cannot get used to the fact that one does not move one figure at a time as in chess, nor to the idea that all the enemy units are moving at the same time. Speed of movement is modified by the type of terrain over which the troops are moving.
- 3 Units charged, or attacked in flank or rear, throw a dice to see the state



Above: Standard of the 84th Infantry Regiment with the motto just visible on the flag, 'Une contre dix': 'One against ten'.



Left: French infantry attacking the defences of the badly battered British Army under Sir John Moore at the Battle of Corunna (January 16, 1809), just before the final evacuation of British troops from the Peninsula.

of their morale, and act according to the dice score.

- 4 Artillery units fire.
- 5 Infantry units fire. Note that although infantry fire after artillery, the fire effect is considered to be simultaneous, and so figures are laid down, not removed from the table at this stage.
- 6 Ammunition used is marked off or removed depending on the method of tally being used.
- 7 Charging units throw for morale under certain circumstances.
- 8 Units charging home cause casualties to the enemy unit they hit.
- 9 A hand-to-hand fight takes place. Most wargamers refer to this as a mêlée.

- 10 Throw the dice to see the state of morale of units at the end of the game cycle where appropriate and required by the rules.

- 11 Place smoke in front of units that have fired. These are symbols.
- 12 Remove casualties from the table. This is not done before this phase because their numbers are important in the assessment of morale.

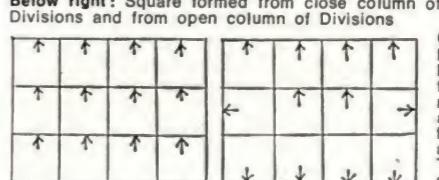
The whole game cycle then starts again, cycle after cycle takes place, until the stage is reached that was agreed upon before the game commenced, and the victor has been decided. This agreement

or six infantry figures, throw one dice. At point blank range the number shown on the dice is the number of figures which become casualties. Each dot on the dice is referred to as a 'hit'. As the range lengthens, or other factors such as smoke or cover come into the computation, then one deducts from the dice throw to obtain the number of hits.

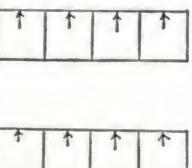
I use dice again to indicate the state of a unit's morale. Two are thrown, and the result shows the morale score. For example, a seven, which is the average score of two ordinary dice, would mean that a unit will do whatever it is ordered

at full strength in close order was $40 \times 21 \div 36$ equals, say, 24 yards. This could be larger if the formation was loose, but smaller when the company was understrength. These two factors probably cancelled each other out. The ground scale I use in my games is 1 inch equals 25 yards (1 mm equals 1 yard). A 20 mm figure usually has a stand 12 mm wide, therefore two figures represent a company frontage; six companies to a battalion equals 12 figures. You will realise from the above that an infantry figure represents 70 men in three close order ranks and supernumeraries; as such it really

Below: Open column of Divisions



Open column of Divisions is the best tactical formation for moving across an area where enemy fire or cavalry attack is expected. This formation can deploy very quickly into line for fire effect, or into square for protection from cavalry, with the added advantage of a fast pace.



takes up too much depth, but this is the penalty I have to accept to ensure that artillery ranges are not longer than the width of a normal wargames table.

A cavalry squadron of 150 men normally fights and manoeuvres in two ranks, and each horseman takes up one yard of frontage. A model horseman again has a stand 12 mm wide (half an inch), and as a squadron should occupy a frontage of 75 yards (three inches), then six figures are a correct representation. Again the depth is too great, but less so than with infantry. A cavalry figure represents 25 men. An artillery battery unlimbered in action occupied a frontage of 95 yards, and a model gun with limber and horses alongside just occupies this space. Here at least the correct depth, 47 yards, can be achieved. Greater historical accuracy can be obtained by having the different national armies organised in accordance with contemporary information.

Infantry battalions in those days used several different tactical formations. To represent these, and to occupy as far as possible the appropriate scale ground space, I organise my figures as shown in the diagrams. The arrows indicate the direction the figure is facing, and the direction of movement and fire.

Cavalry formations are similar, except that one would normally use three figures to a company. Six figures are, of course, a squadron, and three or four squadrons make up a regiment. In the infantry, two or three battalions make up a division.

Further up in the command structure, three or more units are grouped together in a brigade, and two or three brigades in a corps. A corps has two or more

Continued on page 521

Medieval Walled Town

CONVERSION PROJECT FROM THE AIRFIX
ROMAN FORT SET

By Terence Wise

HAVING explored the conversion possibilities of the Airfix Sherwood Castle (covered recently in *Airfix Magazine*), it naturally did not take long for me to turn my attention to other kits in this same range to see what else could be converted for use by the wargamer or diorama enthusiast. The Roman Fort kit at once offered many possibilities for conversion and, sticking to the medieval period, I decided to convert this kit into a small walled town. Before I started cutting I looked up a few facts on the subject and these are outlined below as a general guide to what can or cannot be done with the kit.

Even from the earliest times, towns were often built close by citadels or castles, and in Norman times towns often grew up at the foot of the castle walls. Unfortunately, the crenellations (see the brief glossary at the end of this article for definition of terms used) of the Sherwood Castle and Roman Fort kits are completely different, so at this stage I decided on a town totally independent of a castle, although you could link the two models if desired. Should you do so, points to remember are: a; the town was usually on the opposite side of the castle to the bailey, and b; the wall walk usually ended before the walls of the town joined the castle. This latter was a safety measure in case the town was captured, or the townspeople changed sides!

Returning to the independent town, the first concern is date. The 11th and 12th centuries do not seem to have been 'good years' for the fortification of towns, and those that were built were usually of timber or even turves. Likewise, most of the 14th century appears to have been spent in ignoring defences, allowing

existing ones to fall into decay and only building new ones towards the end of the century when there was a threat of invasion from France. By the 15th century the fortifications were mostly obsolete and the gates were often used to collect tolls, or as prisons, armories, etc. This leaves only the 13th century, which will help to increase the span of years covered by your buildings, the castle conversion having been designed for the late 12th, early 13th centuries.

In the early years of the 13th century, fortifications became much more prominent, probably because from about 1204 until 1220, England was threatened with invasion, and in the latter part of the century new fortified towns were built in England and Wales. (Also in France if you want to go Continental.) From about the middle of the century, stone also became more common as the main building material, and this finally settled my choice of date—about 1275.

These new towns of the late 13th century, and indeed many earlier ones, usually had a rectangular or slightly circular shape, this being considered best from the defensive point of view. Keeping this in mind, one conversion has been made in a rectangular shape, but has also been designed so that the various independent units can be rearranged to make up any outline required. The double

walls on the wall walk in Fig A show where these various units meet, and from this you can see that sections of wall could easily be removed from East and West walls to extend the length of the North and South sides, or the whole shape could be changed to oval or circular by just a little rearranging. For convenience of discussion the units can be divided into walls, towers and gateways.

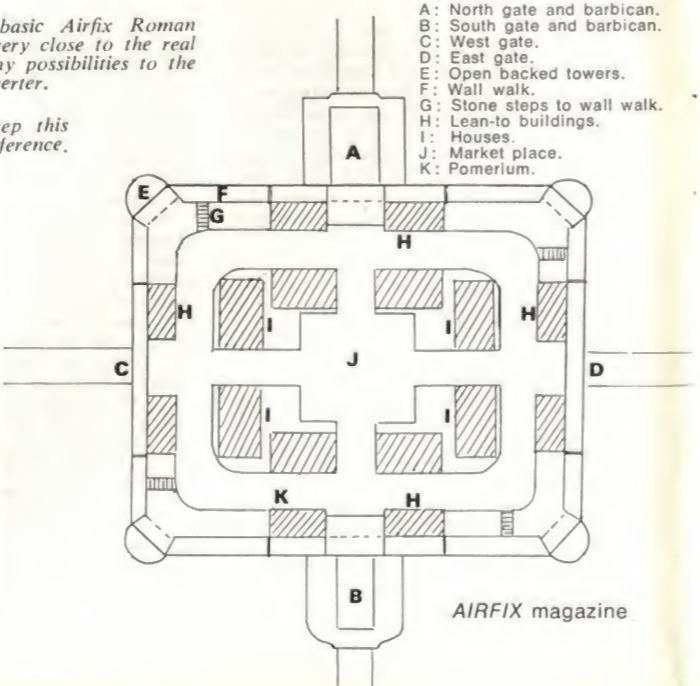
Walls

These formed a defence simply

by acting as a sheer physical barrier, also being designed to link up the other parts of the defences. Although usually well sited, so as not to be overlooked from higher ground, etc, they were not necessarily well planned for defensive purposes, as were the walls of castles for

Below, left: The basic Airfix Roman Fort kit, which is very close to the real thing yet offers many possibilities to the converter.

Right: Fig A—Keep this plan for future reference.



AIRFIX magazine



A late 13th century town gate, with squarish entrance. The gate was restored in the 16th century, which may account for the small windows, although this style was quite common in 13th century structures.



Left: An open backed tower of late 13th century. The holes are not firing slits, but to receive the ends of beams, on which would be built the hoardings, or brattices, in time of siege. These overhung the foot of the wall to enable the defenders to protect the wall from the assaults of various weapons such as the pick and bore.

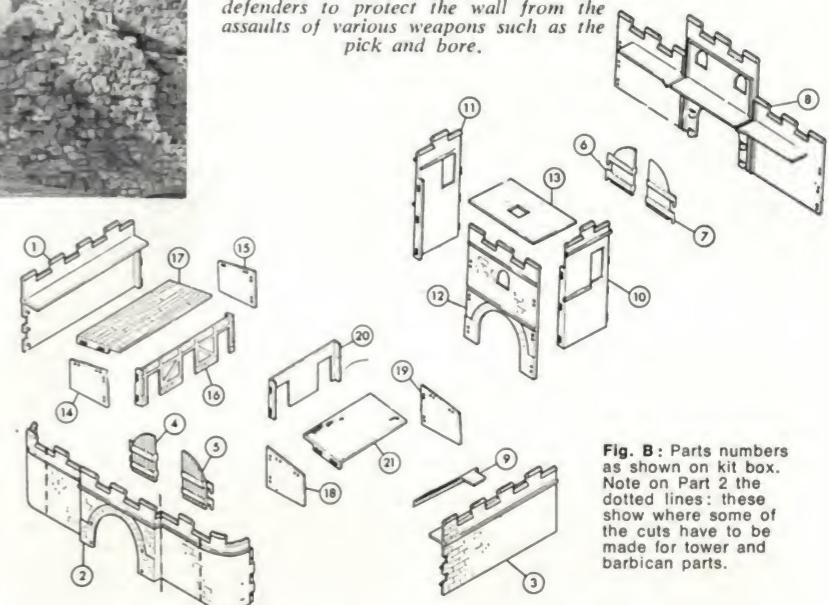


Fig. B: Parts numbers as shown on kit box. Note on Part 2 the dotted lines: these show where some of the cuts have to be made for tower and barbican parts.

instance. (The men who built town defences were not the same as those engaged in building castles, and the development of ideas was completely different. For example, square towers, replaced in castles during the first half of the 13th century, were common in town defences of the 14th and 15th centuries.) Style of building was mainly decided by the amount of money which could be raised by the town, and could be either a double face of stone, packed with a rubble core, or just an exterior face of stone, the rest being merely rammed earth. As my town is of necessity rather small, I thought it would also be rather poor, and I have therefore used the latter method, described in full when building the sections. Double stone facing would entail the use of about nine kits: in this conversion I have used five kits.

Towers These could also be all stone or stone and earth, again depending on money available. Although more common in the 13th century castles, the open backed towers used in this conversion were sometimes employed in town defences where money was short. Economical on labour and materials, this type of tower was useless once the enemy was inside the walls and many towns, therefore, went to the expense of all-stone towers which could be defended



Monnow Bridge, the finest example of a fortified bridge in Britain. Built about 1290, the gateway has a portcullis and machicolation in addition to doors. The gateway stood before the town wall, acting like a sort of advanced barbican.

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independently. To me this seems pointless; the defences are for the town as a whole and once the enemy is inside the walls all is lost. (This is nearly always the result of sieges on wargames tables!) Open backed towers can be used to divide the wall walk by having a removable wooden 'bridge' across the rear of the tower. Should the enemy gain one part of the wall, these bridges could be lifted to prevent the enemy rushing round the entire defences. Open backed towers occur in the town defences of Conway and Caernarvon (both 13th century). Towers were usually slightly higher than the walls, but not always, and both alternatives will be given in that section.

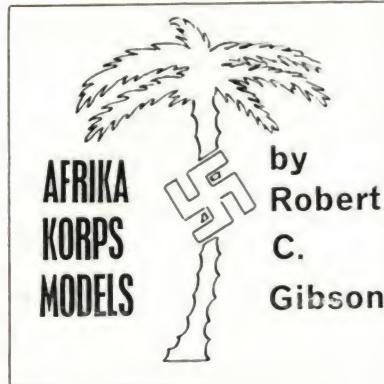
Gates These were the most important part of the defences, the most heavily fortified, and were therefore usually provided, even in the poorer towns, with all the refinements more common to castles: arrow slits, a portcullis, machicolation, murder holes, barbicans and drawbridges. In the conversion these turned out to be so strong that only a madman would consider attacking them!

The Town Although a decent amount of walls, towers and gates could be made up from the five kits, the area enclosed was still rather small. However, I felt that a larger circuit would take up too much room on a wargaming table, and be out of the question for the diorama builder. I therefore decided the contents of the town should be representative rather than realistic: the most important factor is the layout, not the number of actual buildings. Towns mean houses, and streets of houses form obstacles to troop movement, so the road layout was of vital importance in a town of this nature. The

Glossary

- Barbican:** Defended enclosure in front of a gateway.
- Crenellation:** Opening in upper part of the parapet.

Continued on page 522



by
Robert
C.
Gibson

1: Introduction

THE Deutsches-Afrika-Korps (DAK) originated as part of a plan to bolster the failing Italian forces in North Africa, virtually eliminated as a threat to British interests in the Middle East in a brilliant campaign terminating in December 1940 with the surrender of 130,000 Italians and most of Cyrenaica.

In February 1941, advance units of the newly-formed 5 Leichte-Division (5th Light Division) arrived, and were sent straight into battle. The 15 Panzer-Division followed in April; together with the 5 Leichte-Division (from September 1941 redesignated 21 Panzer Division) it constituted the main part of the Afrika Korps throughout its campaigns in the Desert.

This short series will cover the DAK and other German units which served in the desert campaigns from 1941-1943.

Organisation: Infantry formations in the Afrika Korps were no higher than regimental strength, serving as an organic part of Panzer divisions or the makeshift Light divisions formed in late 1942. Each Regiment had a strength of 14 companies, organised as set out in the table below.

Company	Battalion	Headquarters
1st Company (Rifle Coy)	I Battalion	(Headquarters Company)—a grouping of the Regimental services, ie, Signals Section, Dispatch Rider Platoon, Engineer Platoon and Motor-Cycle Platoon.
2nd Company (Rifle Coy)		Each Panzer Division had a Motor-Cycle Battalion (also classed as Infantry) of five companies:
3rd Company (Rifle Coy)	II Battalion	Three Motor-Cycle Rifle companies (5 cm Mortars, Light and Heavy Machine Guns)
4th Company (Machine-gun Coy)		One Machine Gun Company (8.1 cm Mortars, Heavy Machine Guns)
+ Engineer Platoon and Signal Section	III Battalion	One Heavy Weapons Company, comprising:
5th Company (Rifle Coy)		Light Infantry Gun Platoon (2 x 7.5 cm le I.G. 18)
6th Company (Rifle Coy)		Anti-Tank Platoon (3 x 3.7 cm Pak 36)
7th Company (Rifle Coy)		The motor-cycle infantry concept lost ground during 1941-42, and the Afrika Korps units were gradually merged into regular infantry formations.
8th Company (Machine-gun Coy)		
+ Engineer Platoon and Signal Section		
9th Company (Rifle Coy)		
10th Company (Rifle Coy)		
11th Company (Rifle Coy)		
12th Company (Machine-gun Coy)		
+ Engineer Platoon and Signal Section		
13th Company (Infantry Support Guns)		
(6 x 7.5 cm I.F.K. 18)		
(2 x 15.0 cm s. I.G. 33)		
14th Company (Anti-tank Guns)		
(12 x 3.7 cm Pak 36 or 4 x 2 cm Flak 38 12 x 3.7 cm Pak 36)		

Right: One of the Airfix 54 mm scale Afrika Korps figures detailed and painted as in the text. Coat these soft plastic figures with Unibond before painting.



Arm of Service Colours 'Waffenfarben'

Nothing has caused greater confusion in identifying Wehrmacht units than the over-liberal habit of reclassifying units. From 1942, certain (motorised) infantry divisions were redesignated as Panzergrenadier divisions. The infantry regiments within these divisions were redesignated as Panzergrenadier regiments regardless of their original status, but retaining their original waffenfarbe. In the main, these units were Jaeger (Rifle) regiments, so the grass-green usually given as waffenfarbe for Panzergrenadier units would be correct. But some of these units were normal (Infanterie) regiments, and had the white waffenfarbe at first.

During 1942, the infantry components of the Panzer Divisions were redesignated as Panzergrenadier regiments. The Afrika Korps regiments from 15th and 21st Panzer were all rifle regiments, but those of the unique Light Divisions before Alamein (90th and 164th) were partly rifle and partly infantry, although all were to become Panzergrenadier regiments.

Motor-cycle infantry had the grass-green waffenfarbe with a Gothic letter 'K' on the shoulder straps. Regimental numbers were no longer worn.

Modelling

One figure from each of the well-known plastic figure ranges has been chosen this month, in 54 mm scale to obtain a better picture of the model Afrika Korps



Typical Afrika Korps uniform, red green when new which soon washed out to a neutral khaki or stone shade. Panzergrenadier in foreground has MP40 and SMG magazine pouches. At rear is shown the tropical helmet and boots and leggings.

infantryman, although the Airfix OO/HO figures can be similarly painted. (The OO/HO size will not be neglected, however.) The Almarks book *Afrika Korps* provides uniform illustrations useful for colour matching.

Headquarters
(Headquarters Company)—a grouping of the Regimental services, ie, Signals Section, Dispatch Rider Platoon, Engineer Platoon and Motor-Cycle Platoon.

Each Panzer Division had a Motor-Cycle Battalion (also classed as Infantry) of five companies:

Three Motor-Cycle Rifle companies (5 cm Mortars, Light and Heavy Machine Guns)
One Machine Gun Company (8.1 cm Mortars, Heavy Machine Guns)
One Heavy Weapons Company, comprising:

Light Infantry Gun Platoon (2 x 7.5 cm le I.G. 18)
Anti-Tank Platoon (3 x 3.7 cm Pak 36)

The motor-cycle infantry concept lost ground during 1941-42, and the Afrika Korps units were gradually merged into regular infantry formations.

AIRFIX magazine



Left: Two views of an Almark German converted to Afrika Korps uniform, complete with feldmütze cap. Right: Two views of a Tamiya Afrika Korps officer.



khaki drill mixes. The sun helmet needs plastic filler to raise it above eye level.

The Airfix Afrika Korps set are in the peaked Einheitsmütze, used from 1942, and in long trousers. Despite these limitations, they are a very well-produced group. The advancing rifleman has been chosen as a typical example. His uniform colours are as for the Tamiya figure, excepting cap and boots. The cap is a very pale khaki drab, with a black/white/red (inwards) cockade on the front, often on an olive drab diamond-shape patch. The triangle on which the cockade is sewn is piped in waffenfarbe, as are the shoulder straps. Boots are tan leather.

The Almarks Infantryman has been chosen to depict the use of the jackboot and old-style feldmütze, not uncommon in the desert, where regular issue was the exception rather than the rule, usually

depending on the RAF and the Royal Navy, or rather their absence. Tunic and trousers are as for the other figures, but boots and webbing are black leather.

All Afrika Korps personnel wore the Wehrmacht/Heer (Army) eagle on the right breast pocket. The tropical issue was in golden yellow thread on a brown backing, but others may well have been used. The collar litzens were light grey with white or green centre line.

One of the more intriguing pieces of headgear destined for the Afrika Korps, according to the Airborne Forces Museum at Aldershot, was a dark red fez with black tassel and Nazi eagle. But as the example displayed is a very good example of the full-dress fez of the 13th SS-Gebirgsdivision 'Handschar', down to the peculiar SS eagle, may I be forgiven for having my doubts?

BOOKS for modellers

Unless otherwise stated, books reviewed are normally available from your local bookshop or from hobby shops which sell books for enthusiasts, including the mail order stockists advertising in this magazine. As a last resort they can be obtained from the publishers whose addresses are given when known. In all cases of mail order, however, suitable postage should be added to the selling prices quoted.

NAVAL

Ships and Aircraft of the US Fleet.

John S. Rowe and Samuel L. Morison. *United States Naval Institute Press*, distributed in UK, British Commonwealth, and Europe by Patrick Stephens Ltd, 9 Ely Place, London EC1. £3.80.

THIS soft cover volume, in its 9th edition, covers in great detail the complete inventory of US Navy equipment, including guns and missiles. Hundreds of pictures, full class lists, technical details, pennant numbers, operational notes, make this an even more comprehensive coverage of the subject than the US Navy section of 'Janes'. US Coast

Guard, Reserve, and MSC vessels are included. Of special interest is a detailed listing of ships sold or transferred to other navies. The huge size of the US Navy makes this a big and fascinating compendium for the warship lover.

Presentation and illustrations are first class and the pictures and drawings run to several hundred (though we did not count them!). There were (and are) many variations within warship classes, especially so in the US Navy where there have been several major refit and modernisation programmes over the years. The book records and illustrates class variations very well, so it should be specially useful to modellers in view of the large number of kits of US warships on the market.

German Navy Warships, 1939-1945.

W. G. D. Blundell. *Almark Publishing Co Ltd*, 270 Burlington Road, New Malden, Surrey. £1.25 (paperback); £1.75 (hardback).

THIS profusely illustrated book has 1:1200 scale drawings of most German warship classes, plus pictures of all main types and classes. There are histories of the different types of ship and their war records, plus the usual basic data and class lists. A good many of the pictures are new to us.

RAILWAYS

How To Go Railway Modelling.

Norman Simmons. *Patrick Stephens Ltd*, 9 Ely Place, London EC1. £2.60.

IT is some years since any new book on railway modelling in general appeared, so this thick volume by Norman Simmons, well-known for his *Airfix Magazine* articles on model trains, should be most welcome. In the 'How To Go' series, it follows a similar format to *How To*

Continued on page 522

PSL BOOKS FOR MODELLERS

How To Go Railway Modelling

By Norman Simmons

The fifth book in the 'How To Go' series covers layout planning and building, electrical wiring, track laying, vehicles, scenery and operation, with numerous illustrations. Written by an expert contributor to *Airfix Magazine*, it includes lists of clubs, magazines, manufacturers, model locomotives and stockists. 216 pp, 8½" x 5½", 111 photos, over 100 drawings, case bound. £2.60 net, plus 14p p & p.



How To Go Plastic Modelling

By Chris Ellis

Editor of *Airfix Magazine*

The second edition of a standard work on plastic modelling. Covers such topics as: basic assembly, detailing, converting, modelling materials, tools, painting, transfers, markings, research, display, maintenance and scenic settings. 168 pp, 8½" x 5½", 80 pictures, 7 pp of scale drawings, case bound. £1.50 net, plus 14p p & p.

How To Go Advanced Plastic Modelling

Edited by Chris Ellis

Editor of *Airfix Magazine*

This invaluable book is an essential companion volume to Chris Ellis' popular book for beginners. Will be enjoyed by modellers all over the world. Goes deeply into assembly, construction and conversion of many different types of plastic models. 192 pp, 8½" x 5½", 100 pictures, 68 drawings, case bound. Just reprinted. £2.00 net, plus 14p p & p.



How To Go Collecting Model Soldiers

By Henry Harris

An acknowledged military expert explains how to make the most of your collection. This book covers choice of scales, displaying models, developing 'themes', and conversion ideas, as well as surveying the history of the different arms. Gives advice on how to plan a model army and how to amass the men and materials for a serious collection. More than 70 superb photographs and a chapter on wargames by Donald Featherstone. 200 pp, 8½" x 5½", case bound. £2.00 net, plus 14p p & p.

Fighting Colours

RAF Fighter Camouflage and Markings, 1937-1969

By Michael J. F. Bowyer

The author, a well-known contributor to *Airfix Magazine*, details the development and changes in camouflage and markings of Royal Air Force fighter types from 1937-1969, and lists the serial number allocations of every RAF fighter ever flown in that period. There are 139 individual drawings which depict specific aircraft in typical markings of the period. 192 pp, 8½" x 5½", 157 photographs, case bound. £1.75 net, plus 14p p & p.



Brunel and After

By Archibald Williams

This facsimile reprint of a book first published by the GWR in 1925 is something of a companion volume to the 'Boys of All Ages' series. It covers the history of the GWR from its inception in 1833 to 1924, describing the techniques, personalities and politics involved. There are 82 illustrations and a two-colour fold-out route map showing the entire GWR network. 216 pp, 7½" x 4¾", case bound. £2.00 net, plus 12p p & p.



Airfix Magazine Annual for modellers

Edited by Chris Ellis

Editor of *Airfix Magazine*

A best-selling collection of features covering all the most popular aspects of plastic modelling. Written mainly by expert *Airfix Magazine* contributors, this instructive book contains 20 interesting, informative articles that will be enjoyed by all keen modellers. Published in association with Airfix Products Ltd. 96 pp, 9½" x 7¼", 316 illus, case bound. £1.25 net, plus 14p p & p.



Classic Ships, Their History and How To Model Them No 1—HMS Victory No 2—Mayflower

By Noel C. L. Hackney

Both books in this unique series not only have a colourful description of the history of a famous ship, but also contain highly detailed, stage-by-stage advice on how to construct a showpiece model of it, using the Airfix Classic Ship kit as a basis. Published in association with Airfix Products Ltd. 9½" x 7½", illustrated, case bound. £1.05 net each, plus 14p each p & p.

Classic Aircraft, Their History and How To Model Them

No 1—Spitfire

By Roy Cross and Gerald Scarborough

Covering the Marks I to V, this book begins with the early history of the Spitfire, its design and early development, and then shows how the basic 1:24 scale Airfix kit of the aircraft can be turned into a magnificent museum-quality replica. Published in association with Airfix Products Ltd. 104 pp, 9½" x 7½", 211 illus, case bound. £1.50 net, plus 14p p & p.



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These facsimile reprints of the GWR's popular 'Boys of All Ages' series by W. G. Chapman describe many aspects of the GWR, its locomotives and their history. 'The 10.30 Limited', 'Caerphilly Castle', 'Twixt Rail & Sea', 'The King' of Railway Locomotives, £1.50 net each, plus 12p each p & p; 'Cheltenham Flyer', 'Track Topics', Loco's of 'The Royal Road', £1.60 net each, plus 12p each p & p.



PSL BOOKS FOR MODELLERS

Ships and Aircraft of the US Fleet

Edited by John S. Rowe and Samuel L. Morison

This, the ninth edition of an excellent reference source for ship modellers, has been completely redesigned and revised. Contains classification and characteristics of all craft in the US Navy and Coast Guard as at September 1971. 293 pp, 10" x 7", 427 photos, 19 line drawings, paper bound. A United States Naval Institute Press book. £3.80 net, plus 21p p & p.



World Uniforms in Colour

Two superb colour books of interest to all military enthusiasts, modellers and model soldier collectors, describing and illustrating the uniforms, badges and ranks of present-day units with regiment and corps histories. £1.50 net each, plus 25p each p & p.



Each vol: 96pp, case bound.

Tanks

An Illustrated History of Fighting Vehicles

By Armin Halle

Illustrated by Carlo Demand

This magnificent book traces the development of one of the most important weapons ever to appear on the world's battlefields. It starts with the story of the early armoured vehicles and then covers the development of the tank up to the present time. 176 pp, 11½" x 10", 184 illus (73 colour) and 223 diagrams, case bound. £9.80 net, plus 25p p & p.

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Edited by Joseph Jobé

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British Warships of the Second World War

By Alan Ravan and John Roberts

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Tank Data 2

Edited by E. J. Hoffschmidt and W. H. Tantum IV

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Modelling the Leopard AA tank

ADVANCED KIT CONVERSION

By R. Pawley

WITH the release of the new Airfix Leopard tank kit it is possible to model the entire Leopard tank family. Essential references are AFV Profile No 19 on the Leopard/Chieftain and any other publications showing good detail views of the Leopard tank and its variants.

The particular model I chose to portray was the AA version of the Leopard. For this conversion you will need plastic card, wooden dowel and parts from your scrap box. Start work by making up the Airfix Leopard tank kit as per instructions, but not section 3.

The new turret is basically an oblong box glued to a shaped base, with guns and radar added. All parts are from 30 thou plastic card, except where shown. A complete set of part drawings is given here. Cut shape and drill the base as drawn, add the radar assembly base, and shape the upsweep at the front for traversing clearance.

Cut part 1 with a bevel at the front, drill a $\frac{1}{8}$ inch hole for a pivot pin which is made from a $\frac{1}{8}$ inch length of a No 10 plastic knitting needle. Cut sides 2 and 4 and drill $\frac{1}{8}$ inch holes to take the guns' pivot pin, also from a knitting needle $\frac{1}{8}$ inch long. Cut to shape parts 3 and 5 and glue to the outsides of parts 2 and 4. Glue sides to part 1 and complete by cementing parts 6, 7, 8 and 9 to form turret: when dry, round off front sloping edges and vertical edges on parts 3 and 5. Then add parts 10, 11 and 12.

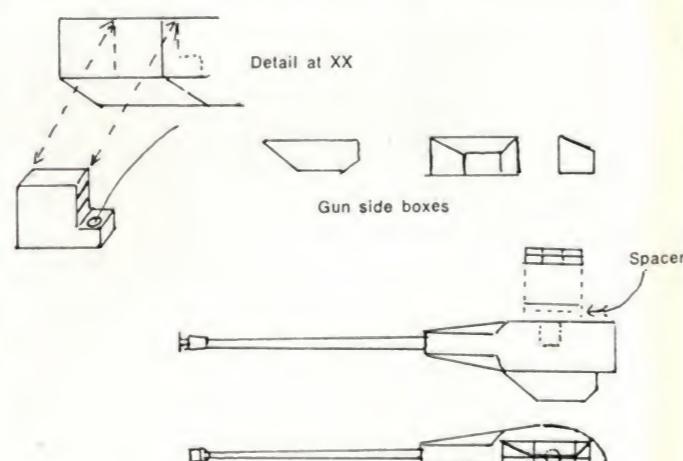
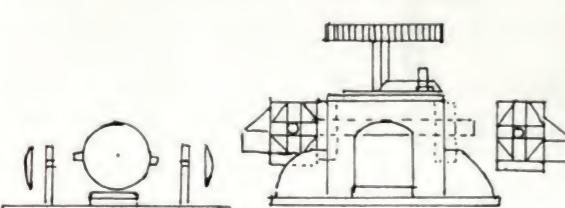
The bulges at the turret sides I made by cutting up a small plastic ball of $\frac{1}{8}$ inch diameter (detail X). Cut the ball in half and then cut a $\frac{1}{8}$ inch segment off each side of one half of the



Above: Two views of the Leopard AA tank made from the standard Airfix Leopard kit with a new turret made from plastic card and balsa.

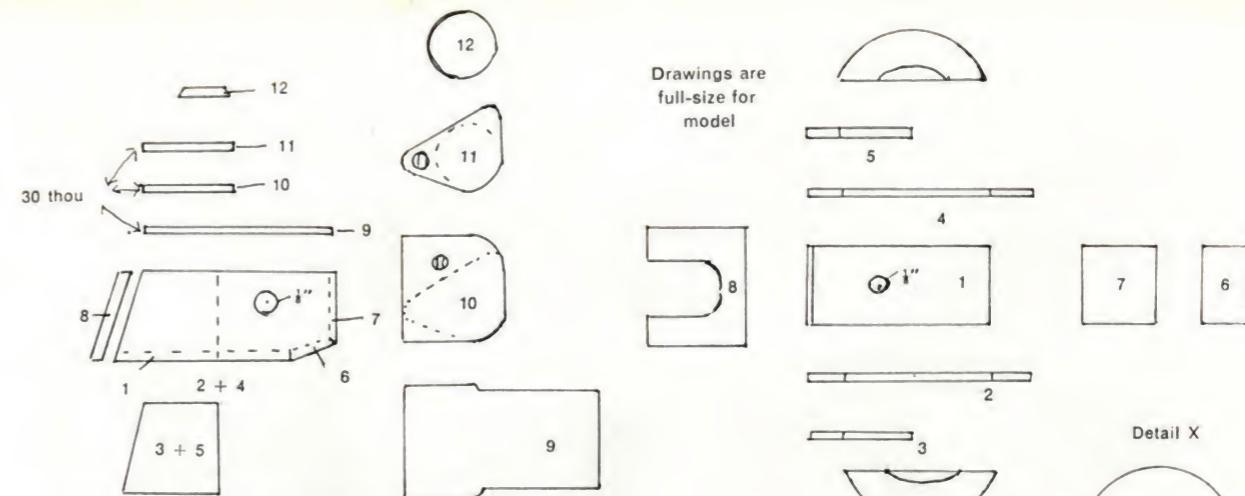
ball. Reduce the height of these segments by $\frac{1}{16}$ inch from the top to leave a flat top. Cut away the bottom of the segments to leave a height of $\frac{1}{8}$ inch. Glue the bulges to the turret sides and base as drawn. These bulges could also be made from a lamination of plastic card cut and sanded to shape.

The gun housings I made from wood cut to side shape and then to plan shape. Then, very carefully, I cut in the facets at the front of the gun housings. Drill $\frac{1}{8}$ inch holes in spots indicated in each gun body to take pivot pins. The gun side boxes are also made of wood cut to shape and glued to the outsides of the gun housings. Make two spacers from two pieces of laminate of 30



Drawings are full-size for model

AIRFIX magazine



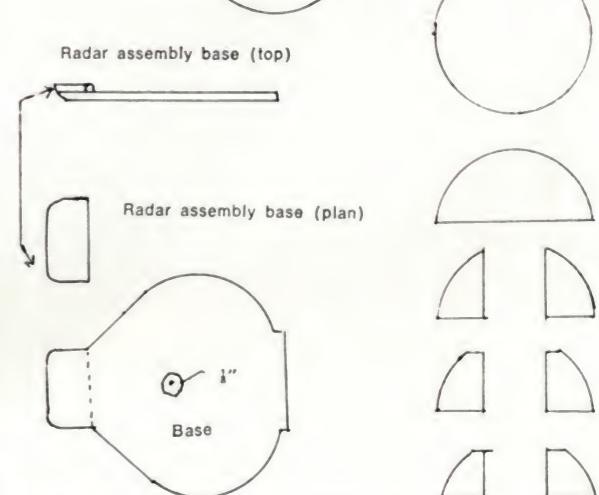
thou plastic card, shaped and drilled as drawn and glued to insides of gun bodies.

Radar assembly

Cut two keyhole-shaped pieces of 30 thou plastic card as drawn and drill $\frac{1}{16}$ inch holes to take the pivot pin. Cut two $\frac{1}{8}$ inch discs of plastic card and sand to a dome shape. Glue these to the upper part of the side supports. The radar bin is made from a piece of $\frac{1}{8}$ inch dowel shaped as drawn, with a plastic disc glued on the front. Drill a hole in the spot indicated to take a pivot pin. The radar bin could also be made from plastic sprue or from a cut-down propeller spinner from your spares box. Glue side supports to the base and, when dry, fit the radar bin in with a pivot pin. The rear radar I made from the spare track from an Airfix StuG III kit. Glue this to a mast made from plastic card.

The box at the back of the turret is made from wood and glued in the position indicated as drawn (detail XX). Add smoke

Below: Leopard AA tank in standard West German Army markings; note that the guns are of the working variety although these could be made static if desired.



dischargers to the turret bulges. Aerials and ventilators are made from scrap. Glue in the turret pivot pin. Paint all parts and, when dry, pass the gun pivot through the turret and glue guns on each end. The guns should elevate but you could simplify the model by cementing them solid.

Below: Oerlikon-Contraves Leopard AA tank with twin radar-controlled 35 mm guns, the subject of this article.





Get this 24th scale SUPER KIT!

The first of the new Airfix Super kits flies in—the Spitfire Mk 1A!

With 150 detailed parts, here is perfection in aircraft modelling!

This magnificent 24th scale model features a superbly detailed cockpit, Browning machine guns complete with ammunition boxes and a super detailed Rolls-Royce Merlin engine beneath removable panels. A propeller motorising unit is available.

This new Airfix Super kit is undoubtedly one of the finest aircraft kits ever produced and a 'must' for all keen modellers.



Superbly detailed cockpit



Rolls-Royce Engine detail



The Browning guns



Get every detail right with Airfix



The Brummbar

T. J. GANDER MARRIES A VACUUM FORM PART TO THE AIRFIX PANZER IV

UP till now, aircraft modellers have had the vacuformed model kit field very much to themselves. Aircraft conversion parts have become commonplace, but the AFV modeller has been poorly served by them. Until recently very few items have been available for the individual who wanted to add unusual AFV variants to his collection but who lacked the skills, time and facilities that the AFV conversion hobby demands. However, this omission has now been partly rectified by the advent of four AFV conversion kits supplied by Argyle Models, three of which are designed to be used with the Panzer IV. The three Panzer IV conversions are for the Jagdpanzer IV (No 502), the Hummel (No 503) and the Brummbar (No 504). The Tiger variant is the Sturmiger (No 501). Each kit is formed from a single small sheet of thick white polystyrene and contains the main structural alterations to be made for each variant. Included in each kit is a short guide to construction. The individual is left to find such items as gun barrels, etc, in his spares box, and it must be stressed that a degree of skill and ingenuity is needed to cut and fit some of the vacuformed parts. However, the method enables wargamers who require numbers of models for their table-top battles to turn out specialised and unusual variants in a shorter time than at present. Each kit costs 15p plus postage and packing and can be obtained from Argyle Models, 103 High Street, The Royal Mile, Edinburgh.

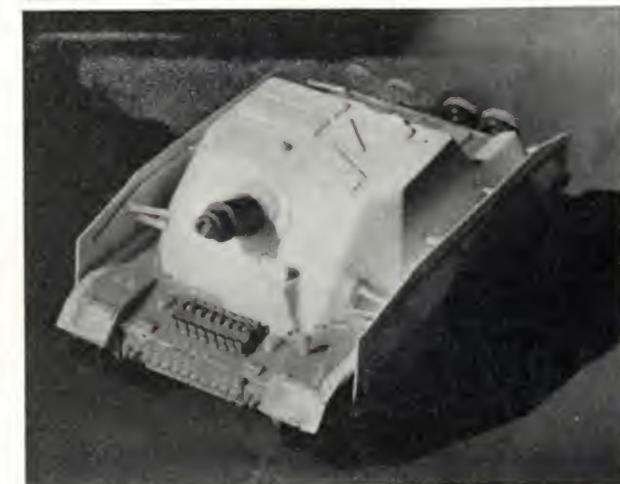
Articles on scratch-building three of these models have appeared in *Airfix Magazine* in the past: the Jagdpanzer in September 1971 and the Hummel in November 1971. The Sturmiger appeared way back in November 1966 but references can be made to the forthcoming Almark book *German Field Rocket Weapons 1939-45*, to be published soon. The only conversion that has not been covered is the Brummbar, so a short account of making this model using the Argyle Model conversion kit follows.

The Brummbar (Grizzly Bear) was designed as a heavy assault vehicle for use in street fighting or as an infantry support weapon, and entered service in April 1943. Its full designation was Sturmpanzer IV (Sd Kfz 166) and it mounted a 15 cm Stu H43 L/12 which was a variant of the standard infantry 15 cm SG 33. It was heavily armoured but early variants lacked a self-defence machine gun, which meant that it could only go into action with close support infantry teams to neutralise enemy 'tank-killer' squads.

Below: The new vacuform AFV conversion kits which are available from Argyle Models. The Brummbar superstructure is second left. Hummel, Jagdpanzer IV, and Sturmiger superstructures are also shown.



May 1972



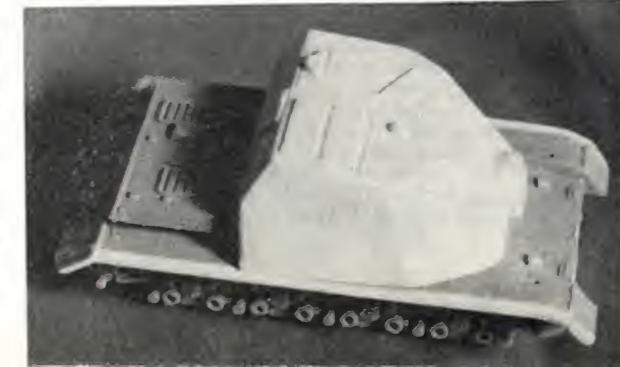
Top: Completed model in grey over sand. For street fighting camouflage red-brown over sand would be suitable. **Above:** This view shows the method of adding the anti-bazooka plates on inner supports.

A good reference for building this model is the Bellona drawing, Series 4 No 14g, which has been used for this conversion.

From the Airfix Panzer IV kit take part 79 and remove all tool detail from the track covers. Also remove the fuel can lug from part 82. Add 2 mm strips (cut from the conversion kit sheet) to each side of the track covers and cut and trim to shape. The use of UHU or a similar glue is recommended for this as ordinary plastic cements are not satisfactory for use with the polystyrene used in the conversion kits. Next take part 78 and cut away the front from the rear engine covers; the instruction sheet with the conversion kit shows where clearly. The chassis can now be assembled as normal, but using the rear half of part 78 only. The fighting compartment can now be cut from its surround, using a sharp knife, and shaped to fit. A sharp knife must be used for this task as a blunt blade will make the job very difficult. The Bellona drawing should be referred to for the exact location. Detail work can begin when the UHU glue has dried. The gun was made up from half a JS3 fuel tank and half a bore evacuator from a Centurion gun barrel. The stowage box over the left-hand engine louvres was made from plastic sheet and measures 16 x 7 x 3 mm and a smaller box was added behind the compartment.

Continued on next page

Below: The basic superstructure in place with the extra strips also added on the track covers.



Brummbar—continued

This box is 3-4 mm high and the sides slope towards the centre so that the side against the compartment is 9 mm long and the rear 7 mm. The box is offset to the left-hand side. Other details are the driver's periscope and a V-shaped hatch guard for the commander's hatch, both made from scrap. The spare wheels cemented direct on to the rear engine cover are a mixture of spare Panzer IV and StuG III parts. A wire rack could be made

Below: The gun fitted in place. **Bottom:** Model almost complete, showing spare wheels and stowage box, and plastic supports for anti-bazooka plates.



for these but would be very flimsy and could not stand up to the rigours of the wargamer's table. The exhaust, suspension and spare track are assembled as normal but the extra spare track on top of the front transmission came from a spare StuG III track.

Extra anti-bazooka plates were essential to the Brummbar in its close support role, but modelling them is a bit of a problem as they stand out just over 1 mm from the track covers. To hang them on Microstrip supports only would mean a very fragile end-product that could not be handled. A more permanent result can be achieved by cutting out the plates, using the outline shown on the conversion kit instructions, and then fitting the tracks to the model. Two odd pieces of scrap plastic cut to about 8 mm long are then glued each side to the hull sides above the road wheels and the plates glued on to these. After the Microstrip brackets have been added the supports are almost invisible and the model can be handled with no fear of damage.

The paint scheme for my model was a basic coat of Humbrol 8th Army desert yellow with a further covering by a dry stipple brush loaded with Panzer grey. The wheels and lower hull were covered with dark earth and the model, after fitting the transfers, was lightly dusted again with gunmetal paint on a dry stipple brush.



A Firebrand TF5, EK840, at RNAS Brancote in 1953. It is in the earlier colours of Extra Dark Sea Grey and Sky. Note the large underwing serials. C type roundels and white fuselage lettering. Primer patches can be seen on the nose and the guns are removed from their housings. Tail-hook appears to be black and white (V. Lee).

FIREBRAND 'PS'

Several readers wrote to point out dimensional inaccuracies in our Firebrand drawing (see article in November 1971 issue). We are happy to offer a corrected drawing and extra notes by R. Hunt.

WHAT should be added to the Blackburn Firebrand conversion article which appeared in the December 1971 issue are the following notes and facts. First of all, no Firebrand ever served with 810 Sqn, nor did any Mk IV serve in front-line squadrons after the change to the later style of Extra Dark Sea Grey/Sky colour scheme.

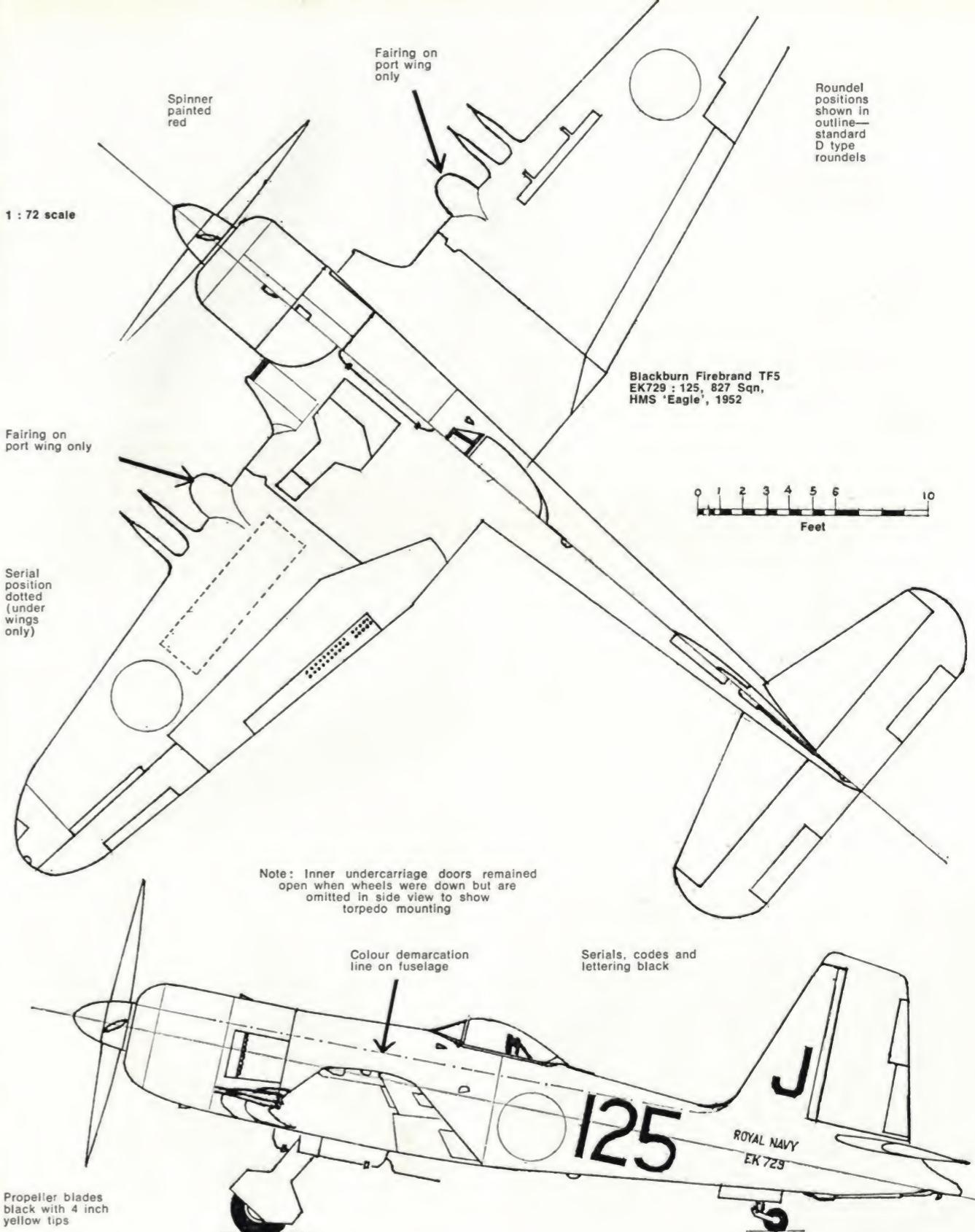
For comparison with the date, power-plant and squadron detail given in the article, I submit the following: 813 Sqn commissioned at RNAS Ford on 1/9/45 with 15 Firebrand Mk IVs, all powered by Centaurus XI engines. These were in the immediate post-war colour scheme and during 1946 were carrying letter/numerical codes, ie, EK611:FD-1H, EK628:FD-IN. The squadron received Mk Vs in May 1947 and used this mark until re-equipped with Wyverns in May 1953. The change to EDSG/Sky colour scheme came whilst the squadron was using Mk Vs. Examples of aircraft during the 'fifties were EK784:103/C, EK734:110/A, and EK748:123/C.

827 Sqn commissioned in December 1950 and used Mk Vs until disbanded early 1953.

Some 102 Mk IVs were produced (EK601-740) and 68 Mk Vs (EK741-850), with about 40 Mk IVs later converted to Mk V standard. Thus, whilst the aircraft featured in the article carries an early serial, I venture to suggest that is, in fact, one of the converted batch and is therefore a Mk V.

Whilst I will agree that the Firebrand was a large machine, I would question that it was in fact as large as the drawing would have us believe. The drawing gives us a span of 54 feet and length of 41 feet 6 inches which, when compared with the true dimensions of 51 feet 3 inches and 39 feet 1 inch respectively, appears to have given us several extra feet of non-existent airframe. Absence of roundels and underwing serial detail is hard to comprehend when the trouble has been taken to include code/serial/fin identity letter on the side view.

My 1:72 scale drawing of the Firebrand TF5, shown opposite, is taken from a mixture of my own measurements and photographs, not from manufacturer's GA. Therefore, I cannot claim it to be 100% accurate but it is, I would suggest, slightly more accurate than the drawing included in the article last December. I hope modellers trying this conversion will not be so advanced with the work that this drawing comes too late to help them! EK632:100/C, another Firebrand, pictured in 1949 or 1950. Note the aerial (not shown on the drawing) and the inner undercarriage doors (John Healey).



THE SPACE SHUTTLE

Peter Fairley, Science Editor, Independent Television News and "TV Times", describes and illustrates NASA's ideas for the "Space Shuttle" projects of the 1970s

All photographs, courtesy NASA

THE time is six years from now. You troop from a luxury, air-conditioned coach to an escalator which carries you up to 40 feet. You walk down a short tunnel into the cabin of what appears to be an airliner about the size of a 707 jet.

There are comfortable, padded seats and several TV sets, fixed to the cabin walls by brackets. The lights are bright and you do not immediately notice the absence of windows.

'This is Captain Gray,' a voice says over the intercom. 'Please fasten your seat belts.'

A few seconds later, a loud humming noise fills the air and the whole cabin begins to tilt. It swings through 90 degrees, so that your back is to the ground and your face and feet pointing to the sky. 'Ten . . . nine . . . eight . . . seven . . . six . . . five . . . four . . . three . . . two . . . one . . . We have ignition!'

You can see nothing outside, but on each of the little TV screens a great belch of flame and steam blots out the details of the picture. You feel a strong vibration. Your seat automatically reclines a little further and you begin to feel a pressure on your chest, making it difficult to talk. But there is little noise.

The picture on the TV screens changes to show buildings dwindling fast and the outline of the Florida coast. The cabin tilts over and your seat adjusts. An indicator panel over the cabin door ticks away with figures and suddenly you realise that in 3½ minutes you have climbed 40 miles above the Earth.

After eight minutes there is a jerk. 'Booster sep,' announces

Pictures on this page show (above): Space shuttle in orbit en route for a space station. Note the use of small steering rockets in the tail for course correction. **(Below left):** The space shuttle links up with a deep-space vehicle designed for use solely in an airless environment. This should be a common occurrence by the 1990s as this method of ground to space transfer saves on fuel and does away with the one ship, one trip method used at the moment.

the intercom. For a few seconds the ride is incredibly smooth. Then more vibration. 'Orbiter engines firing'

The blue of the sky on the TV sets has changed to deep purple and now black. You suddenly feel a delicious lightness and notice that you are floating out of the padded comfort of your seat and bumping gently against the seat belt.

You are in space—aboard The Shuttle.

'The Shuttle', as it is known, is America's next generation of space vehicle—the key to cutting the cost of space activities and to allowing ordinary, untrained people to go up into space.

When the first American satellite was launched 14 years ago, it cost a million dollars for each pound of weight put into orbit. Four years ago, when the mighty Saturn 5 rocket began lifting astronauts, it cost 1,000 dollars for each pound sent on its way. But 'The Shuttle' should cut costs to the point where only 20 dollars need be spent for each pound sent up.

The reason for this cheapness is that 'The Shuttle' is being designed to be used over and over again.

It is, as its name suggests, a vehicle to shuttle men and supplies back and forth between the ground and outer space. Eventually, it will be able to take off from—and land back on—conventional airfields.

It will be a mixture of rocket and plane. The booster will be basically a large rocket—slightly smaller but rather similar to today's Saturn rockets—and the plane a dart-shaped, super-tough, streamlined vehicle able to zoom in and out of the atmosphere at high speed. It will ride piggy-back on the booster for the first 50 or so miles of its climb—then its own rocket engines will take over to put it into orbit.

After it has completed its mission in space it will fire itself back into the atmosphere—then switch over to jet engines for landing on an airfield.

Eventually, it is planned to make the booster rather more like a plane, as well—able to land back on an airfield. But the first boosters—the ones that will blast-off in the 1970s—will be rockets whose fuel tanks can float back to Earth on parachutes so that they can be picked up and used again.

President Nixon gave the 'go-ahead' for the 'Space Shuttle' on January 6 1972.

Already, several thousand scientists and engineers are at work

on the project which is expected to cost more than £5,000 million. Some of these engineers are British—men with experience of building Concorde. For the Anglo-French supersonic airliner has many of the features that will be needed in the Orbiter part of the 'Shuttle'.

It will have to be able to withstand great heat, perhaps more than 2,000 degrees Fahrenheit, as it re-enters the Earth's atmosphere. That is why there will be few windows.

It must be manoeuvrable at high and low speed, able to move about in space at 17,500 mph, and able to turn or bank at 200 mph as it comes in to land. It must be easy to maintain—so that it can be re-used again and again (perhaps as often as 10 times a year)—and easy to re-fuel. It must be completely airtight in all its sections, so that parts can be thrown open in space to allow objects or men to be placed outside at will.

Pictures on this page show (right): The shuttle being used for launching a small satellite. **(Below right):** A shuttle matching orbit with a space station formed from modified Apollo and Saturn modules. **(Below):** Artist's size comparison between the initial stage of the shuttle and a Boeing 707.



Scientists believe the 'Shuttle' will be able to carry many types of cargo. It will be able to ferry men to and from Space Stations—great laboratories in permanent orbit—or allow them to repair satellites that have gone wrong.

It will be able actually to launch satellites—flinging them out of its cargo bay.

It will be able to act as a Space Station on its own—staying in orbit for up to 30 days. And it will be able to carry out some space rescues, nudging up alongside any spaceship in distress (steps are being taken to make sure that it can join itself on to Russian as well as American vehicles).

And because the Orbiter part of the 'Shuttle' will be comfortable and roomy—the cargo or passenger bay will be about 80 feet long and 15 feet in diameter—many ordinary, untrained people will be able to go up safely in it, travelling without spacesuits.

In fact, the US National Aeronautics and Space Administration suggest that it may be possible to offer the 'Shuttle' to university groups or research teams from many nations, including Britain—so that they can not only design space experiments but actually go up into space with them.

So, from 1978 onwards, there will be a new Space Age—one that could give a taste of space to you.



Details for the Airfix Gladiator

A simple project, ideal for both beginners and experts, which turns the basic kit into a fine show-piece

By Bryan Philpott and Charles King

THE Gloster Gladiator was the last of the biplane fighters to see service with Fighter Command, and although it reached the zenith of its career at the time of the Munich Crisis in 1938, some squadrons were still equipped with this agile fighter at the outbreak of World War 2.

Outclassed by its opponents, the Gladiator was still able to give good account of itself in combat and made more than its mark in the Norwegian, Western Desert and Malta campaigns. Because of its length of service the Gladiator enables the modeller to choose many colour schemes, ranging from the colourful pre-war markings to the more sombre schemes used in its active service.

One of the most famous actions involving the Gladiator was the defence of Malta, when three Sea Gladiators were pressed into service to defend the Island. These three machines became known as 'Faith', 'Hope' and 'Charity', whether at the time of the campaign, or at a later date, is still not clear and is in any case beyond the scope of this article. One of these aircraft, N5519 'R', is the basic subject of this conversion, but alternatives are given, for the modeller who wishes to try another version of this



Above: These fine pictures came to us from a reader and show early days of Gladiator operations in the Western Desert in 1940, probably just after war was declared by Italy. The pictures, exact date and place unknown, show the method adopted for transporting aircraft by a Maintenance Unit working from Egypt. Two different machines are shown, carried by White or Mack 6 x 6 trucks. Note A type roundels on upper wings of N5821; also note the primer patches on the upper wing.

ubiquitous aircraft.

Although the kit as purchased leaves a lot to be desired, being one of the earliest offerings from Airfix, it still remains the only 1:72 scale model of this important aircraft available, and must therefore be used by the modeller who wishes to add this historic aircraft to his collection.

STAGE 1 Before joining the fuselage halves together, remove the rudder and also the moulded pilot's head, at the same time opening the cockpit area to enable detailing to be carried out. Cut a new rudder from plastic card and shape this to aerofoil section. The rib detail will be described later. When satisfied that this is accurate place it on one side until the fuselage halves are joined together. Next make a cockpit floor



and instrument panel from plastic card. The floor is made from 20 thou plastic card and the panel from two pieces of 10 thou and 20 thou plastic card. Drill out the instruments in the thinner part and paint matt grey, paint the thicker part matt black, then stick the two together so that the black shows through the holes. When this is dry take a pin or sharp pointed modelling knife, and carefully mark the needles and figures; following this fill the openings with gloss varnish to represent the glass in the dials.

The seat can be made from plastic card or taken from the spares box, and should be fitted with a safety harness. We made this from drafting tape or brown paper with the stitching represented by Indian ink and the buckles by silver paint. The control column is of the circular grip type and was made from stretched sprue painted black.

At this stage the cockpit entry flap, which is clearly marked on the kit moulding can be removed and the inside framework added with stretched sprue. When this work has been carried out satisfactorily, cement the cockpit interior into one half and join the two fuselage halves together. The detailing on the original fuselage is rather heavy, so fill all the panel lines with body putty and when set sand the whole fuselage smooth.

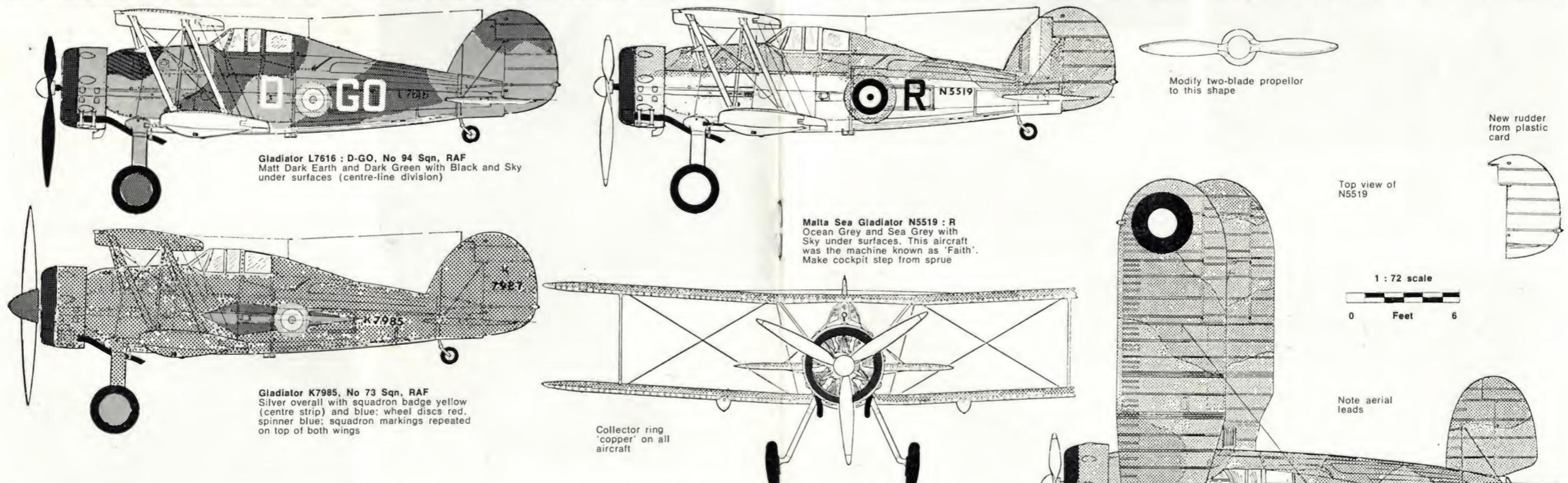
STAGE 2 Remove all the surface detail from the fuselage, wings, and tailplane, finishing with a light grade glass paper or 'wet and dry'. If this is done carefully, it will still be possible to see where the original lines were as these will show up as black strips on the plastic. Take some 30 thou plastic card and cut it into 2 inch and 3 inch lengths about $\frac{1}{8}$ inch wide; stretch this in the same way as the sprue, and the result will be rectangular cross-sectioned strips. It is advisable to practice this operation

on scrap first. Take the fuselage and cut pieces of the stretched card to the lengths of the rear fuselage stringers and bulkheads, then cement these in place with liquid cement or dope thinners. This part of the operation requires very careful application of the adhesive. Tube cement will not do for this work, and it is stressed that Mek-Pak or the previously mentioned dope thinners must be used. Apply the cement with a fine brush at the same time making sure that the stretched plastic card is in the correct position. Liquid cement and thinners will attack the plastic causing it to have a 'crazed' surface, but this faithfully reproduces the doped fabric covered rear fuselage, and looks most effective when the model is painted. Once again the watchword is caution, and some trial runs on an old model or scrap plastic should be made first. The same operation is carried out on the wings, tailplane and rudder. This is a somewhat tedious exercise but the end result is worth all the time taken on it. Be careful not to let any of the adhesive get on the forward fuselage which was metal covered. The rather crude machine guns in both the fuselage troughs and wing blisters are now replaced with new ones made from plastic rod.

Continued on next page



Above: Blenheim cowling and propeller are used to enhance model's appearance. Alternative is to re-work Gladiator cowl (seen right) though the Blenheim cowl is better for this purpose.



STAGE 3 Replace the kit cowling and propeller with a cowling, engine and propeller taken from the Blenheim IV kit. It is necessary to cut down the length of the Blenheim cowling to that shown on the drawings, and also to reshape the small intake on the undersurface of the cowling, which has to be fitted if either the Malta Gladiator or one of the other wartime variants is being modelled. On the earlier two-bladed propeller versions, leave off the intake but still use the Blenheim cowling, as this produces a much more convincing model. The spinner on the three-bladed version must either be made from scrap or a suitable one found in the spares box. On the conversion shown a spinner was taken from a Revell Spitfire and reduced in overall size. On some of the Gladiators a spinner was not fitted, so by omitting this a model would not be inaccurate, but all the existing pictures of N5519 show this particular aircraft with its spinner in place.

STAGE 4 Assemble the kit components in the order shown in the instructions, but for ease in fitting the upper wing, glue the interplane struts in place and give them time to set nearly hard. Place the wing on the fuselage, which should by now have the lower wing fitted, and match the struts into the locating holes. Carefully remove the assembly and allow the struts to dry thoroughly before finally fixing them into position. The cabane struts are fitted in the same way and should automatically fall into the correct positions when the top wing is finally cemented into place.

STAGE 5 As mentioned earlier a wide variety of finishes are possible with this model and plenty of reference can be found in Profile No 98, the Camouflage and Markings publication on the Gladiator, and in the Hylton Lacey, *British Fighters of World War 2 Vol 1*, to mention just a few.

The Malta Gladiators were Dark Slate Grey and dark Ocean Grey camouflage on the top surfaces, with Sky type S under surfaces which extended halfway up the fuselage. All markings came from Dri-Dec sheets M9, M10 and M16 but others are equally suitable. Finally, rig the model by using stretched sprue or 44 SWG enamel wire held in place by PVA white household glue which dries to a transparent finish.



Above: Completed model fully rigged and painted. Right, top: Rib and stringer detail added to fuselage and tail. Right, centre: Canopy added; note painting and markings completed before upper wing is added. Right: Another view of a Gladiator in Egypt, N5651 is heavily weathered and the fuselage roundel lacks the yellow outer shown on the other aircraft. Finish is presumably Dark Earth and Middle Stone but close study of the original prints suggests undersides could be black/white, if not Sky. Does anyone have further details of these machines?



ATTENTION ALL RAILWAY MODELLERS ! HOW TO GO RAILWAY MODELLING

By Norman Simmons



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A/5/72

Turntables for freight yards

Michael Address talks about a useful feature for small layouts—
the wagon turntable

THESE small hand-turned tables are found not only in Britain but also in many other countries. They allow wagons and vans to reach sites otherwise inaccessible to railway tracks, for example the interior of warehouses. Locomotives cannot, of course, be used to move wagons on these tracks and the goods vehicles must be shifted by man or horse power, by tractor, or by a cable and powered capstan arrangement.

Wagon turntables, although quite common on prototype railways, are rarely seen in model form. This is a pity because they can add considerable interest to an industrial or dock scene, a warehouse area or a quarry. The only commercially available model is the one made by Peco for 009, but turntables of other sizes and for different gauges can easily be made up from plastic, card or wood: for greatest simplicity they need not even be movable, though it is rather better to make them so that they can be rotated. The accompanying photos give some idea of the various types which are in use.

Top of page: Manpower is used to move these metre gauge box vans in Palma. The turntable allows vans to be spotted along two adjacent (90° angle) sides of a loading bank which is served by only one siding. **Right, upper:** The same turntable seen from where the left-hand man stands in the upper picture. Note the operating lever and the van tucked alongside the loading bank. **Right, centre:** An unusual cruciform type turntable in a quarry. Note that there is no lead-in track from the camera side. **Right, lower:** A plate type table on a quarry line. A disc of thick plastic card could depict this in model form. **Below:** A wool processing plant in New Zealand with a turntable allowing wagons to be spotted at loading banks alongside the building or taken inside. Sidings lead in from left. Note the tractor shunting. This arrangement would be ideal for an industrial spur on a model layout in either standard or narrow gauge. The factory could be in low relief. For narrow gauge the Peco turntable is readily usable.



Introducing the Airbrush

BRYAN PHILPOTT LOOKS AT THE ART OF AIRBRUSHING AND THE EQUIPMENT NOW AVAILABLE

THE introduction of the range of Badger Airbrushes from the United States to the UK means that this type of sophisticated equipment is now generally available to a wider cross-section of the modelling fraternity. But it must be remembered that the acquisition of an airbrush is not an immediate passport to the realms of the expert. Like all equipment, it will only be as good as the modeller using it, and to master it takes both time and patience.

Basically an airbrush is a very precise miniature spray gun, and is used by artists, graphic designers and photographic re-touchers, as well as most professional model makers. There are two varieties available, one being the gravity fed type, such as the Aerograph DeVilbiss type Super 63 and the Pressure fed type such as the Badger series 200. In the former the paint cup is on the top of the gun and the paint is fed into the reservoir by gravity, whilst in the latter version the paint jar is underneath the gun and the paint is sucked into the reservoir by a Teflon tube. In application they are, of course, similar, and it is in this respect that this article is primarily aimed.

Before taking a closer look at some of the techniques involved and the finishes that are possible, it is as well to point out that although the Badger Model 250 is called an airbrush, it is *not* capable of the finer work that can be achieved with the more expensive models. It is, however, an ideal primer and will give the beginner a basic grounding in simple finishes, mainly on overall colour. It should not be dismissed as a 'toy' but it is worth repeating that it is not capable of reproducing such work as fine lines or Luftwaffe mottle camouflage on 1:72 scale models.

One of the most important aspects to consider first is the basic finish of the model, ie, the final state before any paint is applied, for the airbrush produces such a fine covering that even the slightest blemish, imperfection or inattention to filling joint lines, etc, will be very apparent. So initially much greater care must be taken in sanding down any body putty, removing scratch marks or applying cement. Once the basic work is complete, rub the model all over with Dura-Glit or a similar fine abrasive metal polish, and polish the whole surface with a soft rag. Joint lines should be scraped level during the early finishing and their final disappearance can be checked by holding the model up to a strong light which will cast a shadow on the surface if the two parts are not exactly level. There is no substitute at this stage



for patience in the use of 'wet and dry' paper and thoroughness will be rewarded with the final model.

Once satisfied that the model is completed to the best of your ability and the colour scheme chosen is available in suitable reference form, attention can be turned to preparing the airbrush for use. Make sure that all the paints needed are available, as well as having a ready supply of thinners, tissues, pipe cleaners and cotton-wool earbuds, not forgetting some clean tin lids or artists' mixing tins, and perhaps most important of all a good quality eye dropper.

When an airbrush has been standing without use, condensation can form inside the air venturi, although some models can be fitted with a water trap; it is wise to connect the 'brush to its air supply and blow it out before attempting to mix paint in the colour cup or jar.

Having tried the 'brush and made sure that everything is to hand, decide on the first colour to be applied. Generally speaking, it is wise to attempt a very simple scheme first before pro-

These pictures show examples of airbrush work on well-known models and conversions. Above, top: 1:48 scale P-47D (Monogram) sprayed silver overall with Badger 250 equipment. Above: The author's Ju 188 conversion (February 1972 issue) in typical 'wavy' Luftwaffe scheme for which an airbrush is ideal. Left: Ju 87G in 1:48 scale (Monogram) with very weathered winter finish all applied by airbrush.

AIRFIX magazine



gressing by easy stages to more complicated finishes, and with this in mind a useful rule is to apply lighter colours first. Assuming that a World War 2 fighter is chosen, apply the under-surface Sky then the Matt Earth, followed by Matt Green. Initially it is best to mask cockpit areas but as skill in controlling the brush is acquired this is not strictly necessary.

The paint should be mixed in the colour cup or jar by putting some in with a No 6 brush, then gradually adding thinners with the eye dropper until the correct consistency is achieved. If it is too thick the paint will simply not pass through the nozzle, and if too thin it will tend to run and not cover. As paints vary, no hard and fast percentages of thinners to paint can be stated, but the correct mix soon becomes apparent. Once again, experimentation and patience is the only answer. It is essential that the paint is very thoroughly stirred, as any small particles will soon block the 'brush, resulting in an extensive cleaning operation before work can proceed. After each colour application the airbrush must be thoroughly cleaned by passing thinners through it and at the end of a painting session it is always advisable to strip the 'brush to its basic components and clean every part, reassembling it, then blowing Polycelens through as a final check. Thinners are used in some quantity and the domestic White Spirit, obtainable at most chain stores, hardware shops and supermarkets, is ideal.

Tissues are used to clean the initial surplus paint from the jar, and ear buds are useful for delicate parts such as the nozzle shroud. Pipe cleaners have a variety of uses but should be used with care, especially in the nozzle area where damage to the outlet jet can be very expensive. The needle that passes through the jet and controls the amount of paint flow, is one of the most delicate parts, and should be handled with extreme care. Any damage to the tip will almost certainly mean the purchase of a replacement needle, and in some cases, such as the DeVilbiss model, this also means a new nozzle as the needle and nozzle are sold as a matched set.

The needle is adjustable to give a fine spray capable of reproducing a line finer than 1:32 inch to a venturi that will give rapid overall cover with ease. Generally the closer the brush is held to the surface the finer the line or dot resulting. Once the air is switched on and the paint is spraying, the airbrush must be kept in constant motion, hesitation in strokes will produce blemishes and if the 'brush is not moved immediately the paint starts to spray, big blots will occur at the point where the paint first comes into contact with the model. A rule that most experienced users of airbrushes follow, and one that should not be forgotten, is 'Air on first and off last'.

When sufficient skill has been achieved in simple finishes, consideration can be given to more complicated schemes and one that comes readily to mind and is always eye-catching, if done correctly, is the Luftwaffe mottle camouflage. The easiest way to describe this is to take a model through every stage. Let us assume that a Bf 109F of JG2 as shown in Profile 184 is being modelled.

First spray the rudder and nose red; when this is dry mask the areas that are to stay red with masking tape. Do not use Sellotape as this will pull off the paint when it is removed. Masking or drafting tape can be obtained from most do-it-yourself shops, and is a brown sticky tape designed for the very purpose we are using it for. When the red has been masked out, clean the 'brush and mix some Hellblau, spray the undersides and



Upper Left: Hasegawa's Shinmeiwa PS-1 flying boat with normal finish applied by airbrush. Above: Two views of the Hasegawa 1:32 Fw 190 in kit markings but nicely weathered and 'war weary', the effect being achieved entirely by airbrushing.

fuselage sides with this colour, then change to Dunkelgrün and spray the top surfaces of the wings and tailplanes. Using the same colour, first run a line along the spine of the fuselage and gradually merge this into the blue along the sides. The mottle is achieved by short sharp bursts on the 'brush, with the spray set fine, varying the distance away from the fuselage to achieve the subtle differences that are apparent in the mottle.

Now mask out the splinter camouflage on the wings and tailplane as this had a hard edge, and spray Schwarzgrün; intermingle this with the fuselage mottle, making sure that it is darker at the top of the fuselage but at the same time ensuring that the Dunkelgrün is not completely covered. Now return to the Hellblau and touch up any area where undesirable overspray has occurred, at the same time merging this colour into the two greens on the fuselage. Finally, paint the spinner white, remove the masking tape and add the other parts before finally completing the model with the transfers. Whilst spraying a colour, try to remember any parts that you have left attached to the sprue that have to be in that colour. An example that readily comes to mind are the undercarriage doors of this model, which should be sprayed Hellblau whilst this colour is in the 'brush. Failure to do this, then thinking that rather than setting up the 'brush again a paintbrush can be used, will spoil the whole effect.

The airbrush enables the feathered effect so apparent on RAF camouflage to be achieved with ease, but make sure that the aircraft being modelled did in fact have a feathering between the colour. If it didn't, use masking tape, which is the only way to get a hard line between different colours.

Matt and gloss varnish can also be used in the airbrush as can matt and gloss paint. If water-based paints such as Polly S are available they certainly cut down time on mixing and cleaning, as the addition of water is very much easier than thinners,

Continued on page 521



Marmon-Herrington armoured car

Scratch-building project
for super-detail fans

by Gerald Scarborough

As a basis for many individual variations, the Marmon-Herrington Mark II armoured car is an ideal subject. These vehicles were used extensively in the Middle East until the end of the Tunisian campaign, when they were replaced by the Daimlers and Humbers which by then were getting over their teething troubles. The Mark II used the 134 inch wheelbase Ford truck chassis with a Marmon-Herrington conversion to four-wheel drive, and an armoured body built in South Africa with British Vickers machine guns in the turret and hull rear; a real combined operation. However, when supplied to the Middle East forces they were re-equipped with Bren light machine guns and Boys Anti-Tank rifles in the turret, with a Vickers and sometimes a Bren for anti-aircraft protection. This armament still proved inadequate and many unofficial modifications were made to mount captured guns, in particular the Italian 20 and 47 mm Breda and the German 37 and 28/20 mm, either in the original turret or behind a large shield. Reference to photographs will give you some ideas on what can be done, and the drawing shows the basic hull/chassis with the conical turret, though the top can be left open and a 'captured' gun fitted.

Useful reference to have by you is Profile AFV Weapons No 30 by B. T. White, which has some good photographs showing the various armaments, etc.

First familiarise yourself with the drawing and the sketch showing the basic construction methods employed. Cut out part A but note that this includes the

Below: Two views of the basic hull made from plastic card and assembled as shown in the plan above.



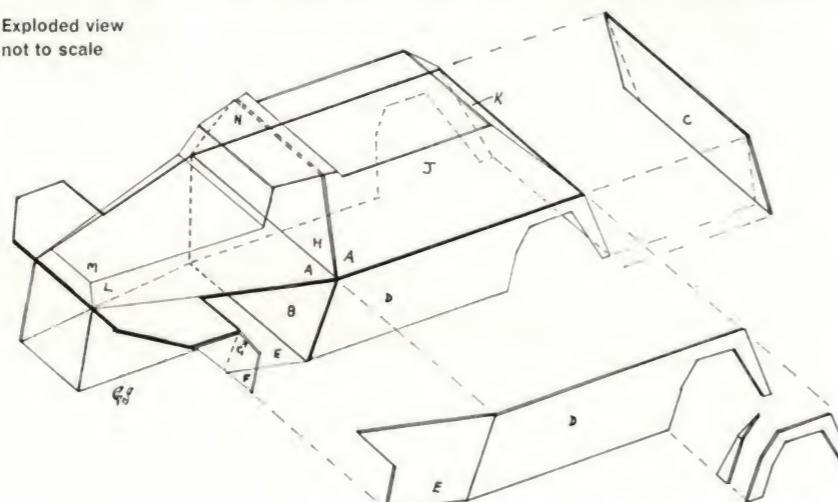
Above: Completed model of the Marmon-Herrington armoured car, note the perforated sand channels typical of these vehicles.

top of the front mudguards all in one piece. Refer to the cross-section drawing to cut the underside bulkhead B and cement this in position vertically beneath part A at the widest point.

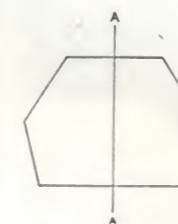
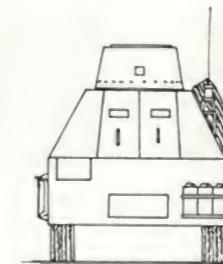
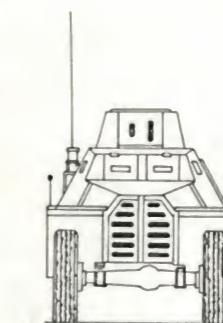
Now add the two lower sides, part D and the rear back rectangle part C. Note this is a rectangle, not tapered as the bulkhead B and overhangs at the lower

rear corners to form the mudguards. Next add the lower front sides, parts E and the mudguard vertical and diagonal parts F and G, which go right across the full width of the vehicle. This completes the basic underside structure and the topsides follow a similar sequence starting with the bulkhead H, followed by the two sides J, and the rear K, not forget-

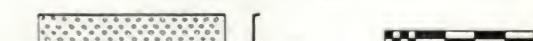
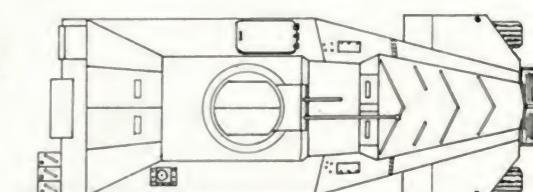
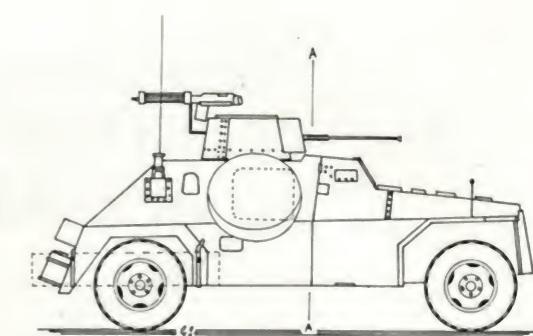
Exploded view
not to scale



Above: Front view of the model showing crew's bedding rolls secured to the bonnet.



All drawings are
full-size for model,
1:76 scale



Above: Side view of completed model showing 20 mm gun and Boys Anti-tank rifle mounted in the turret.

and hatches to the top with the guns from plastic rod and stretched sprue.

Axles came from the spares box, the front was an Airfix Austin Ambulance rear axle, while the one at the rear was modified from a DUKW. The wheels are from the DUKW kit, with the centres from an Austin sanded down thinner to fit. It was not unusual to see odd tyres fitted to these armoured cars and, in fact, my spare is from a Bedford QL.

Final equipment stowage is up to individual taste but sand channels were usually carried as shown on the model, not always with holes, though I think this improves the effect, camouflage nets, etc, on mudguards, water and fuel cans, crew's kit, etc, can all be installed, but that is up to you; there is ample scope in this direction. Incidentally, there are

other mounting positions for the spare wheel, even two can be carried, so have a good look through your photograph references.

The colour of my model is Humbrol British 8th Army Desert Yellow, HMI, and has not been 'weathered' yet as I wished to photograph the model 'as new' so as not to disguise the shape. However, the Profile gives a good camouflage finish which seems to have been normally used, so I intend to finish mine off in this scheme.

My drawings have been based on one of those in a series of AFV and 'soft skin' vehicle plans marketed by Len Morgan, 45 Goldsworthy Gardens, Silwood Street, London SE16 2TB. A stamped addressed envelope to Len will bring you his extensive list.

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Bottom left: World War I tank Bottom centre: Lee/Grant tank Top left: 88mm Gun Right: Centurion



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AIRFIX magazine



Part 36: The Battle is Won

DURING September 1944, Bomber Command was removed from the control of the Supreme Allied Commander and put under the Chief of Air Staff for a new strategic campaign directed principally against oil and petroleum targets, ball-bearing works and motor vehicle factories, although the Command would still be available to attack tactical targets if required.

Casualties remained heavy but by October 1944 were falling, since there was less enemy territory to cross before Germany was reached. Gee and G-H stations were soon positioned nearer targets and operations became more and more complex and much larger. Added to this, 100 Group was really coming into its own, making feint attacks, upsetting radar gear, engaging night fighters and generally confusing the enemy interception forces.

By October most of 3 Group Lancasters had G-H fitted, this Group making day raids using about 200 Lancasters. A G-H leader, whose aircraft wore two horizontal yellow bars on both sides of its fins, headed boxes of two or three others not so equipped. About 80 G-H aircraft could be handled per operation, range of the equipment being about 250 miles.

Allied commanders were eager to take Walcheren since it overlooked the entrance to the Maas, and on October 3, 247/259* Lancasters were despatched to breach the sea wall at Westkapelle, allowing sea water to flood part of the island. On the 7th, dykes at Flushing were attacked, and again on the 11th. Then a wider breach was caused at Westkapelle to allow assault craft to pass through, followed by further tactical attacks made on Flushing's guns.

A massive onslaught was delivered on Duisburg on October 14 by 1,007/1,063 aircraft, of which 15 were lost. The following night 998/1,005 repeated the dose and six more were lost. To protect the force, another 141 aircraft flew diversions, and 233 sorties were delivered against Brunswick. A training feint was launched against Hamburg, which was bombed by Mosquitos, who also flew a feint to Mannheim. The Duisburg raid was by two waves, the second of which went in as the Brunswick force withdrew.

Daylight raids were effective, although smoke and dust were handicaps to visual bombing. At night, crews aimed at Target Indicators which if correctly placed by the Path Finding Force, brought more accurate bombing on many occasions than by day.

*Numbers printed thus indicate number of aircraft attacking and number of aircraft despatched respectively.



Mosquito B XVI, MM183: P3-A of 692 Sqn. Initially delivered to 128 Sqn on Sept 16, 1944, it went to 692 Sqn on Sept 25, was involved in a flying accident on Feb 1, 1945, passed to de Havilland for repairs but was instead struck off charge March 23, 1945 (Imperial War Museum).



This photograph of a Halifax shows the camouflage pattern applied to the later production aircraft. Weathering and staining, particularly from the exhausts over the wings, can be clearly seen (Imperial War Museum).

On October 25, for instance, when the new campaign opened, 199 Halifaxes, led by 12 Mosquitos and 32 Lancasters of 8 Group, bombed without loss the Meerbeck synthetic oil plant at Hamburg. Another 771 aircraft attacked Essen.

Maritime targets were not overlooked and on October 4, 6 Group raided the U-boat pens at Bergen, an attack repeated by 244 Lancasters of 5 Group on October 28/29, an operation seriously impaired by poor visibility. On October 5, 5 Group sent 221 aircraft to Wilhelmshaven, each Lancaster taking 10 x 1,000 lb HEs and a few incendiaries, a break with normal practice since the Group was currently taking 80% incendiaries on operations. Twelve squadrons of 5 Group using 237 aircraft operated against Bremen on October 6/7 with two aircraft of each squadron carrying HEs and the rest complete loads of 4 lb incendiaries. Nuremberg, Dortmund, Stuttgart and Cologne were also bombed in October during which, on the 24/25th, 955/1,055 aircraft bombed Krups at Essen, losing eight of their number.

Without doubt the most spectacular performers in the Command were now 9 and 617 Squadrons. On October 7, 14 of their Lancasters (including EE146:D, LM492:W and PB416:V), half forming a high level force at 5,000/8,000 feet, with the remainder at 500/800 feet, breached the Kembs barrage, thereby preventing the Germans controlling flood water to halt the Allied advance. Three squadrons of Mustangs covered them. On the 15th, 18 Lancasters of 9 Squadron, six with half-hour delay Tallboys, the rest with 11 second delay Tallboys, tried for the Sorpe Dam which 617 had been after in May 1943. It was tough, however, and even these earthquake bombs failed to breach it.

It was still desirable to knock out the battleship *Tirpitz*, now sheltering in Norway. Nos 9 and 617 Squadrons had tried for her in Alten Fiord on September 15 when operating from a Russian airfield, Yagodnik, but a smoke screen over the ship resulted in only one bomb from 27 Lancasters hitting her. She moved to Haak Island, Tromsö, coming within range of Lancasters based at Lossiemouth and Kinloss. Merlin 24s were fitted to these bombers giving 18 lb plus boost for take-off and allowing take-off weight to increase and range to be extended by the installation of a Wellington long-range tank and a Mosquito drop tank. The fuel load, 2,406 gallons, permitted a 2,252 mile track.

Luck was out on this operation, four aircraft did not bomb

Continued on next page

Bombing Colours—continued

due to cloud at the vital moment. NF920 of 617 Squadron was hit by flak and force landed. Some of the others returned with quite a lot of fuel despite the length of their sorties.

On November 11, the 9 and 617 Squadrons force again flew to Scottish bases, 36 Tallboy Lancasters, with the Film Unit machine, a meteorological reconnaissance Mosquito and transport aircraft. Modifications to the Lancasters, including the loss of their dorsal turrets, permitted an all-up weight of 70,000 lb including 2,400 gallons of fuel. The force took off for the third attempt at 03.00 hours on the 12th, and this time 29 attacked, 18 of 617 Sqn and 11 of 9 Sqn, including WS-R-NG252 and PB696-WS-V. One of the first bombs hit the *Tirpitz*, then two more, resulting in her turning turtle.

Meanwhile, the grand offensive against Germany was in full swing. On November 2/3, 946/992 aircraft bombed Dusseldorf and 16 were lost. Losses were generally lower now, and on 16th, when 1,188 Lancasters and Halifaxes attacked Julich, Duren and Heinsburg, only four failed to return. The heavy raids on oil targets continued unabated, G-H being useful on cloudy days. By the end of November the Command had despatched 15,008 sorties. Mine-laying continued, too, 1 Group topping the bill with 270 mines laid.

Between the start of October and the end of December, only five out of 20 attacks on the Ruhr had been delivered at night, yet it was not until December that sizeable formations of enemy fighters tried to interfere. Massive Spitfire and Mustang escorts were provided for these daylight *Ramrods*. Only when escorts were absent did the enemy have any success. But flak was still heavy and dangerous, and on October 6, when 126 Halifaxes of 4 Group led by eight Mosquitoes and 23 Lancasters of 8 Group, bombed the Sterkrade oil plant, 70% of the Halifaxes were hit by flak, although only three were brought down. Some idea of the strength of the fighter cover may be seen from that afforded Lancasters bombing Wanne Eickel on November 9, when Nos 19, 41, 122, 124, 126, 129 and 234 Squadrons (nearly all Mustangs) gave cover.

There were 19 day operations in December. Five were against oil plants and four on the Urft Dam to prevent the enemy controlling possible flood water. On the 3rd, 200 Lancasters of 1 Group set out for the dam but cloud prevented an attack. Next day, 30 crews of 8 Group attacked it, 129/205 on 8th when visibility was bad, and 180/239 bombed it on 11th. But the results were poor and it was decided to capture it instead.

On 23 nights in December the Command operated, putting over 1,300 aircraft up on two nights. From 15,333 sorties, 135 aircraft were missing. One of these was Lancaster PB371 piloted by Sqn Ldr R. A. M. Palmer. His machine was attacked by fighters but he continued and marked the rail installations at Cologne despite having two engines on fire after fighter attack. For his example he was awarded the Victoria Cross. By this time some of the effort had been diverted to communications targets to damage Von Rundstedt's counter attack. The oil offensive was not forgotten, however, and on December 6 a record force (291 Lancasters of 1 Group, 123 of 3 Group and 71 of 8 Group with 12 marking Mosquitoes) bombed the Mersburg plant. On 29/30th, 1 and 6 Groups combined to attack the plant at Gelsenkirchen.

Despite its mighty power, Bomber Command still delivered attacks which went astray. On December 13/14, 61 aircraft of 54 Base (5 Group-Base 4) were sent to attack shipping in Oslo Fiord, in particular the cruiser *Koln*, active from different berths. Mosquitoes selected the target then a visual attack developed—by the end of which it became apparent that the effort had been wasted on a merchant ship! *Koln* was two miles west, a few aircraft having attacked her and missed.

A deeper penetration was to Gdynia on the 18/19th, a base for the remnants of the German fleet. Some 227 aircraft attacked, but the target was out of Mosquito range so Lancasters had to mark the target instead. The Master Bomber, however, gave the wrong wind vector so the target was missed, although a 'Schlesien' class ship was left down by the stern. A third attempt to get the *Koln* was made on December 31, by 28 Lancasters of 5 Group. Twelve were from 617 Squadron and carried Tallboys



Opposite, top : Lancaster LS-N :PA170 taxis out at Mildenhall in the autumn of 1944, seen from below the wing of a sister machine. Opposite, lower : Lancaster LM583 of 467 Sqn circa August 1944 wearing white fin and a cross motif. Codes are repeated small on the aircraft's nose (Imperial War Museum).

Drawings, right : A selection of 6 Group Lancasters of 1944-45 vintage. Top to bottom : KB18 : VR-J of 419 Squadron based at Middleton St George featured the extended bomb bay of early Mk Xs. KB700 : VR-Z 'Ruhr Express' as recorded at Middleton. Previously coded LQ-Q, it became VR-Z and then had its bomb bay extension cut away to allow the fitting of an H2S radome. Two 'standard' Lancasters of 6 Group, KB757 : NAC has the usual bomb bay doors and 'C' on her nose in Dull Red. She belonged to 428 Sqn at Middleton. RF207 : AL-S of 429 Sqn was based at Leeming. Both of the lower aircraft featured a Martin turret (fitted to some of the later Canadian-built aircraft) fitted further forward as on the Mk VII. SE : Q-KB861 belonged to 431 Sqn, Croft, and WL-P : KB863 to 434 Sqn, also based at Croft. All of these aircraft were recorded during their service by our artist Alfred Alderson.



Drawings by
A. M. Alderson



Small yet vital communications targets always proved difficult to wipe out, and there were still many intact rail routes leading to the western front. On some of these there were large bridges and viaducts, notably at Arnsberg and Bielefeld. In February, it was decided that destruction of 18 bridges or viaducts would isolate the Ruhr. The heavies were called in, especially 9 and 617 Squadrons. During February they attacked E-boat pens at Poortshaven (from where midget submarines were harassing Antwerp) and the pens at IJmuiden. On February 22, 17 Lancasters of 9 Squadron demolished part of the Altenbeken rail viaduct, whilst 617 Squadron went for a similar structure at Bielefeld. One bomb burst beneath a span but it still stood. The first real success came on March 14 when Sqn Ldr C. C. Calder took PD112 : S to Bielefeld. From her fell the first 22,000 lb DP Grand Slam bomb. The bridge was shaken to its foundations and much of it collapsed. More Grand Slams were dropped on 15th and 19th as the build-up for the Rhine crossing took place.

On the 19th, 617 Squadron took 13 12,000 lb HC and three 22,000 lb DP bombs to wreck the Arnsberg viaduct. On the 23rd, aircraft (including PD119 : J and PD114 : B), with five 22,000 lb and 12 12,000 pounders were taken to destroy the Nienenburg

bridge, but one Grand Slam and three other bombs were sufficient.

On April 6, area attacks on German cities were discontinued. Operations would now be directed against oil, maritime, transport and tactical targets. On April 7/8, the last important oil plant-cum-thermal power station at Molbis was attacked. Mosquitoes marked for 186 Lancasters of 5 Group and considerable damage was caused.

Special operations by 9 and 617 Squadrons continued. On April 9, 17 aircraft of 617 Squadron, supported by 40 Lancasters of 53 Base, attacked U-boat pens at Hamburg. For once enemy fighters were up in force, among them a number of Me 262s. A running battle developed and four Me 262s were claimed by the gunners of 617 Sqn. On the 16th came the highlight of April when 19 Lancasters of 617 Squadron, carrying Tallboys, attacked the *Lützow* in Swinemunde. One aircraft was shot down on the run in and, although bombs just missed the ship, these hefty weapons were sufficient to cause her stern to sink.

At the start of April, intelligence sources suggested that the enemy was retreating into Lower Bavaria and Bohemia, where he might hold out for quite a considerable time, until forced to

Continued on next page

Bombing Colours—continued

capitulate. On April 4, 244 aircraft of 5 Group attempted to kill Nazi and military personnel from Berlin who were in Nordhausen. Oboe Mosquitoes of 8 Group marked, and 55 Base bombed the barracks. The whole town was devastated. Another terrific onslaught followed, this time against the island of Heligoland. Some 943 Lancasters, Halifaxes and Mosquitoes—of which three were lost—took part.

Had the British public been asked to name one target in Germany that should be destroyed they would surely have cried 'Hitler!' The thought must often have crossed the minds of those in high places. More to prove to the Nazis the futility of continuing the fight than to kill their already crippled leader, Bomber Command directed one of its last operations against Berchtesgaden (Hitler's hideout in Bavaria), where British Prime Minister Neville Chamberlain signed the infamous Munich Agreement in 1938. On April 25, 318 Lancasters took off with, as their target, Hitler's 'Eagle's Nest' high above Berchtesgaden and his more often used residence, Berghof. It was not a particularly successful operation, despite the delight with which it was undertaken. Nos 9 and 619 Squadrons led the Main Force to attack Wachenfels with 12,000 lb HCs. It was a tiny target, which 9 Squadron over-ran. Although six of 617 Squadron bombed, there were no hits on the eyrie.

The great bombing offensive was all but over. The much-vaunted 5 Group flew its last operations on April 25, when 55 Base and 49 Squadron had despatched 123 aircraft to Berchtesgaden, dropping 287 tons. At night, 5 Group had 119 aircraft operating against the oil refinery at Tonsberg, while 72 mines were laid by 14 aircraft. These operations were the last by Main Force, and ended the mining campaign which brought far better results than had been expected.

The final offensive action by Bomber Command was taken, significantly, by Mosquitoes attacking airfields and making a 124-strong raid on Kiel, supported by 100 Group Mosquitoes, Liberators, Halifaxes and Fortresses. The high-speed unarmed bomber concept had been amply proven, and the Canberra (then already under consideration) was to carry on de Havilland's revolutionary concept.

Although the war was almost over, an urgent problem had arisen. In retaliation for the non-co-operation of Dutch railway workers, the Germans had caused a large slice of the land to be flooded. The net result was drowning or starvation for many people. It therefore fell to Bomber Command to attempt some relief. Quick dropping trials were held in 115 Squadron at Witchford, as a result of which it was decided to deliver packages of food and essential supplies to the Dutch people. This, Operation Manna, was a task in which all who participated would never forget. The sight of hundreds of huge bombers roaring low over Britain and Holland would last a lifetime. Used as we had been since September 1939 to seeing the bombers slowly climb on circling their bases, it was indeed tremendously thrilling to stand in the flat lands of Eastern England and witness an armada the like of which was so soon to vanish, and see it at deck level. To those starving people it meant life from a force that had been built to kill. And kill it had: for the contribution to victory made by Bomber Command was surely one of the biggest factors in the Allied victory.

Markings in 1945

Alterations to types of aircraft involved in the closing months of the bomber offensive against Germany consisted of modifications and detail changes where markings were concerned.

By now the ascendancy of the Lancaster I and III was unquestioned. 1, 3 and 5 Groups were fully equipped, and 6 Group to varying degrees, although this formation was never fully equipped until the last few days of the war.

What 1 Group never exhibited by way of interesting markings, it did to some extent make up for in other ways during the last few weeks of the war. By this time a number of Lancasters had modified turret arrangements. Some of them had Rose-Rice rear turrets fitted with two .5 inch guns as on AS-C in May. But a more striking combination was the fitting of a Frazer Nash



Top: Close-up of the nose of a Halifax VI of a French squadron. Further details unknown. **Above:** Halifax B VI NP763:H7-N, like PN187, has French roundels and fin flash, with red trellis work tail markings. Red 'N' is outlined yellow. Note rounded wing tips (Imperial War Museum).

turret, similar in appearance to the dorsal turret of the Lincoln, and positioned much further forward than the usual Lancaster dorsal turret. This was a feature of AR-O and SR-U:NX575 in May 1945, whilst SR-S:NX572 had this and the Rose-Rice rear turret. SR-C:NG402 and IL-I of 115 Squadron both had .50 inch rear turrets. All of these Lancasters had standard red codes in the usual fore/aft positions, and all had H2S, which by now graced most operational Lancasters. Typical examples of these, recorded at the start of May 1945, were PH-O:RE122 and PH-V:RA585. Others with the usual style and colour codings at this time and which had the standard turrets were IO-E, IQ-D, OL-A, BQ-G, GA-V, HW-B, PM-B, TC-W, P4:C, TO-M (which was flying with a fairing replacing its nose turret), LF-M, AP-R, AR-M, QR-L, 60-M, 60-Z, HC-A, CF-P and UL-D. Some of these code letters still remain to be assigned to squadrons.

Most of the aforesaid Lancasters wore standard markings, but this was not true of those in 5 Group. About August 1944 a few of their aircraft appeared with special tail markings. The intention was for these selected machines to act as 'flight leaders' within the daylight gaggles of Lancasters, and certainly the number which received tail markings was limited. When I recorded these I noted that only occasionally would a machine be seen with these markings, and was only able to tie down ZN-A of 106 Squadron (with a red horizontal bar across her fins) and KM-S:PB380 with a large red 'X' across the entire outer tail surfaces in September 1944. ZN-A was probably JB663. DX-Y:RA530 of 57 Squadron had red on both sides of each fin with a narrow vertical black stripe, whereas the others quoted had colours on only one side, apparently in February-March 1945. On April 9, I noted an uncoded Lancaster with similar markings on her tail. No 467 Squadron had at least one aircraft, PO-O:LM583, with white outer fins with probably a black + at the top, this in August 1944. One aircraft of 619 Squadron had red fins with a black chordwise band slightly higher at the leading edge than at the trailing edge. It used to be tempting to surmise that the style of these markings was connected with the base (or clutch of stations) within whose care they were held, but this seems unlikely. In October 1944, when these colourings were in vogue, 5 Group Bases and associated squadrons were No 53: 9, 50, 61, 463, 467; No 54: 83, 97, 106, 617; No 55: 44, 57, 207, 630, 619; No 56: 49, 227, 189. It would be interesting to hear from any of our readers who flew these special aircraft or who logged any.

Another feature that appeared late August 1944 on 5 Group Lancasters was the narrow yellow outlining to codes which was a feature of some, but never all the Lancasters, in 5 Group squadrons. Two examples were NE165:OL-Y (October 1944) and

OL-J (May 1945). Although I logged many 1 Group Lancasters in the closing months of the war, the only one of that Group that I saw with yellow outlined codes was AS-N, interesting because, unlike most Lancasters, she had her unit letters ahead of the roundels on both sides of the fuselage. Some 5 Group Lancasters had their unit codes painted in red above the port tailplane (to be read from the leading edge) with the individual letter above the starboard tailplane, but again this feature does not appear to have been anything like unusual. Another item sometimes boldly applied was the aircraft's individual letter positioned on the outer surfaces of the fins in red outlined yellow. Aircraft in Nos 9, 50, 61, 49 and 463 Squadrons are known to have had this identity, featured by VN-E:PB821 of 50 Squadron. But in the field of markings all things seem possible—KC-A:LM489 of 617 Squadron in February 1945 merely had red codes!

A very low flying Lancaster thundered over my home on March 15 1945, then circled. She was unusual since her upper camouflage extended to the base of the fuselage, in which the bomb bay was deeply cut away. She was uncoded but it was not long before another, equally strange, came into view, YZ-C:PB996. This wore the usual Lancaster camouflage with red codes and, like the former, had her nose and dorsal turrets removed. Night bomber markings did not last long on these special Mk I aircraft and in April I saw several with red YZ coding outlined yellow and with their under-surfaces medium grey. Serials remained red on the camouflage now extending down to the 60 degree tangent. One was YZ-L:PD117, lost on March 21 1945. PB996:YZ-D was similarly marked. Tallboy droppers retained their black undersides when serving in 617 Squadron, camouflage carried by NG339:KC-G and NG494:KC-B which participated in the raid on Dreyse in March 1945.

Lancasters of 3 Group carried only one distinctive marking. This consisted of two horizontal yellow stripes sometimes painted on all four faces of the vertical tail surfaces, sometimes on the outer faces only. These markings came into use late October 1944, my first of many loggings being of A2-G of 514 Squadron. I spent a day with 514 on October 4 1944, when the squadron was preparing for a night raid on Saarbrücken. One of the participants was JI-B:LM274, which wore one distinctive feature, red spinners in her Flight colouring. A2-E:NG118 in impeccable state had blue spinners, whereas JI-Z:PB423/G had traces of previously being 'S', such a feature often being visible on wartime bombers. I only found one machine on the squadron with a nose painting, JI-D:LM827, with a lamp post at the foot of which was a busy dog alongside the legend 'DIRTY DOG'. On October 28 I recorded LS-E of 15 Squadron with four red squares low set on her outer fin and rudder surfaces, and no fin flash. Two later 514 Lancasters with yellow tail bands denoting G-H equipped aircraft were JI-Q:ME422/G and JI-A:LM285 noted on March 25 1945 at Waterbeach. A week later, JI-E had them, also A4-L and LS-E.

Canadian-built Lancaster Xs began to arrive in Britain in September 1943, the first, LQ-Q:KB700 'Ruhr Express', making a sortie on November 22, before passing to 419 Squadron and becoming VR-Z. Mark Xs went to 6 Group, which was partly Halifax equipped to the end of hostilities. Lancaster introduction was as follows: 405 Squadron (LQ) first used Mk III for pathfinder role 2.8.43; 408 Squadron (EQ) Mk X received May 1945; 419 Squadron (VR) first Lancaster operation (using Mk X) April 27/28 1944, when KB706:VR-A and KB728:VR-V took part; 420 Squadron (PT) equipped April 1945, flew no operations; 424 Squadron (PT) Mk I received January 1945, first operation—eight Lancasters to Ludwigshafen 1.2.45; 425 Squadron (KW) Mk X received May 1945; 427 Squadron (ZL) Mk I/III received March 1945, first operation March 11; 428 Squadron (NA) Mk X received May/June 1944, first operation June 14/15 when aircraft used included KB705:F and KB742:M; 429 Squadron (AL) Mk I/III received March 1945, first operation 31.3.45 against Hamburg; 431 Squadron (SE) received Mk X October 1944, first operation November 1, aircraft included KB741:SE-Y; 433 Squadron (BM) Mk I received January 1945, first operation February 1; and 434 Squadron (WL) received Mk X December 1944, first operation December 24. Aircraft included P:KB863. 6 Group's final bombing operation was on April 25 1945, with Wangerooge as the target, aircraft participating including



Top: Lancaster RA530:DX-Y of 57 Sqn has red codes outlined yellow in the customary 5 Group manner. Her fins are red with a black vertical stripe. **Centre:** Three Lancasters of 90 Squadron, the leader bearing the two yellow bars denoting it was G-H equipped. Photo taken in 1945. **Above:** Lancaster NN801 served as the prototype Lancaster VII, similar in configuration to some earlier aircraft and late Mk Xs, has her dorsal turret positioned further forward.

VR-M:KB999, VR-V:KB728, NA:R-KB882 and NA-Z:KB739.

On February 17 1945, at Farnborough, I had a look at ND673:F2-V, a Lancaster VI, its engines installed as 'power eggs'. These were annular cowled Merlins designed for easy maintenance and removal. Otherwise she was a normal Lancaster as regards marking, with F2 in the fore/aft style. Paddle-bladed airscrews were fitted, as she lacked a dorsal turret. In the well-known picture of her by John Rawlings she appears to have striping on the tail, but this was not a special operational marking. An interesting feature was her radar. Over the tail turret she had a long arm with tail warning radar as well as bow and arrow aerials pointing at about 45 degrees from the base of the extreme rear fuselage. She had served on 635 Squadron at Downham Market from August to November 1944, where JB675:U, ND418:Q and JB713:Z (missing August 18/19 1944) also flew trials. The Mk VIIs were no real advance over earlier marks, but they paved the way for the engine installation on the Lincoln.

No mention of the Lancaster would be complete without some reference to outstanding examples. Over 20 managed 100-plus sorties, remarkable when one considers the usual loss and damage rate. They included QR-N:ED860 of 61 Squadron which had completed a 130th trip by October 30 1944, by which time it had flown 1,032 hours. QR-M flew its 120th trip on December 3 1944, and had 971 hours to its credit. VN-G:ED585 completed its 127th sortie by August 29 1944, having flown 1,052 hours. JB138:QR-J flew 113 sorties and LL843:QR-R its 118th by May 8 1945.

The principal version of the Halifax in use in the closing months of the war was the Mk III, many of which had square wing tips. They equipped 4 Group, which introduced tail identity squadron colours about August 1944. Many of these have been illustrated elsewhere and typical machines in August 1944 were MP-G and MP-T, both IIIs of 76 Squadron with yellow outer faces to their fins and rudders, from which fin stripes were deleted. There remained variations concerning aircraft with and without H2S radomes. Some had belly turrets favoured by 4 Group. In August 1944, MP-C had one and others without radomes were MP-H:LW627, MP-D:NA571 and MP-Q:MZ691 with 'MP' forward on both sides of the fuselage.

Continued on page 520

NEW KITS AND MODELS

Titan: Dust Covers

As many people will know to their cost, models are rather fragile and prone to collect dust and dirt if left for any length of time on a display stand or shelf. This problem can now be solved by a relatively modest outlay of cash in relation to the lessening of domestic friction in the modeller's home. Titan Dust Covers are moulded in a clear see-through plastic and come in four different sizes suitable to hold most types of model. There are also three different ground inserts available to assist display. These three inserts depict rough ground, sea, and a mirror finish to show off the underside of anything placed above it. Sizes available at the moment are 26 inches by 7 inches, 18 inches by 7 inches, 13 inches by 6 inches, and 6 inches by 6 inches. The overhead covers are of varying dimensions to accommodate anything from a fully rigged four-decker to a squadron of 25 mm cavalry.

There are 165 parts to the kit, but most of these can be accounted for by a few pieces, 28 oars, 28 shields, 28 shield bosses, etc. This makes it a very simple kit to put together, with hardly any rigging to do. If you rig the sail you don't need the oars which, on the other hand, look good in position. If you rig the 'tent' the ship loses much of its grace and little detail is left visible to the eye. One feels the model lacks something, and that something can only be supplied by the modeller — a diorama with Viking warriors would give life, or a burial scene perhaps, since this ship was finally used for such a purpose. This kit will be whatever you make of it and has great possibilities. The kit is distributed by Riko, 13-15A High Street, Hemel Hempstead, Herts, at a price of £2.12. Most large model shops stock Heller kits. D.L.

Seagull Models: barbed wire/fencing

SEAGULL Models, PO Box 62, London SE19, are offering some neat photo engraved wargame and modelling accessories. Known as 'Real Models', the items concerned are in metal. First item is 10 ft of 'barbed wire', very neat and realistic, and most suited to 54 mm models. Price is 55p. Of even wider appeal is a set of 1:250 scale fencing and guardrail, 4 feet in all, and intended for ship models but obviously valuable elsewhere. The price is 55p. Similar guardrails are available in 1:400 scale (65p) and 1:200 scale (75p). Seagull can supply by post. C.O.E.

Heller: Viking ship

A VERY graceful model, this kit is based on the Oseberg ship, one of the three Viking ships found in Oslo Fjord between 1867 and 1903. (These three examples may be seen in the Viking Ship Museum at Bygdo, outside Oslo.) The Oseberg ship was a highly decorated 'luxury' vessel with fine, delicate lines; the other two were working ships of a heavier build and lacking in decoration. Heller have chosen to use the Oseberg ship as their model, yet have made the parts of the kit more in keeping with

the other ships, so you have a cross between an ocean-going raider and a light craft probably used only in and around the fjords. However, this is an advantage — all you have to do is decide which type of ship you want to make from the parts!

The text is in French and English, with a complete list of parts, an exploded view of their assembly, and detailed drawings of the more difficult parts of assembly. The parts themselves are clean and well marked, and run to a constant scale of 5 mm to the foot if you allow for the Oseberg ship being slightly smaller than the other two. The only painting instructions are the box art and a few French words on the exploded plan, but there is little colour to the model except for the shields. These are too large, by the way, and new ones need to be made to scale, which is a pity as the transfers are quite attractive.

Each cover is designed to fit one of the bases, as follows: 18 inches high by 18 inches long, 7 inches high by 26 inches long, 10 inches high by 18 inches long, 7 inches high by 18 inches long, 5 inches high by 13 inches long, and 2½ inches high by 6 inches long. This cover and its base, incidentally, is made so that it can be stacked on top of another of the same dimensions. Prices range from 24p to slightly over £2 and the covers are available in either standard or de Luxe material. For further details send a large SAE to Titan Manufacturing Co, 24-26 High Street, Southall, Middlesex, quoting this review.

D.L.



The SE 5A and Fokker Triplane models from the Edison Air Line range, 1:72 scale cast metal.

stand out from a row of plastic models. The wheels have separate tyres. The SE 5A and Fokker Dr I stand up well in outline and dimensional accuracy to plastic models in the same scale. 'Best Buy' for the serious enthusiast would be the Brandenberg as this is not available as a plastic kit. The Nieuport 11 and Sopwith Baby would similarly command themselves. With a repaint, and possibly some filing of tail surfaces, appearance of these models could be greatly enhanced and they could certainly be placed among plastic models in an enthusiast's collection.

We were interested to see an announcement for some further models due soon, a Supermarine S5 Schneider Trophy plane (different from the S6 models sold as plastic kits), a Gee Bee Super Sportster, a Macchi MC 72 Schneider Trophy seaplane, and a Grumman Gulfhawk. The first two are to 1:72 scale and will be well worth adding to a 1:72 scale collection. Unfortunately, the others are to be to 1:84 scale, something of a retrograde step. Each of the World War I types costs 84p. The British importers are Model-time, 6 St George's Walk,

Continued on page 514

MODEL TOYS

PLASTIC KIT SPECIALISTS—ASSOCIATE MEMBER I.P.M.S.

MODELDECAL 1:72 SCALE

Also available in the Modeldecal range are the following sets: BAC Lightning Mk. 1A, 2 and 6 (six alternatives in RAF service). No. 2: McDonnell F.4 Phantom (VMFA-531, VMFA-532, USAF, and 767 Sqn., R.N.). No. 4: U.S. Navy (F6F-3 Hellcat, VF-6; SBD-3 Dauntless, VS-2, and TBM-3 Avenger, USS Bunker Hill). No. 6: U.S. Navy (F4U-1A Corsair, VF-17; SB2C-3 Helldiver, VB-7; OS2U-3 Kingfisher, NAS Pensacola). No. 7: Royal Air Force (Hunter F.6, 14 Sqn.; Phantom FGR.2, 6 Sqn.; Meteor F.4, 63 Sqn.; and Harrier GR.1, 1 Sqn.). No. 8: USAF (Tail code letters, serials, "mini" insignia, etc.). No. 9: U.S. Navy (A-1J Skyraider, VA-176; A-7E Corsair, VA-195; SH-3A Sea King, HS-2). No. 10: USAF-S.E. Asia (RF-101C, F-105D, A-1H and EC-47N). No. 11: F-102A, 460th FIS, USAF; Harrier GR.1, 4 or 20 Sqn., Sabre 6, 430 Sqn., RCAF and alternative RCAF Sabre fin emblems. No. 12: Phantom FGR.2, 17 Sqn., RAF; F-104G, 10th F.B. Wing, Belgian A/F, and TAC Badges, No. 13: German Air Force and Navy (T-33A WsLW50; G.91R/3, LeKG43 (431 Sqn.); F-104G, MFG.1). No. 14: Royal Air Force (Sabre F.1, 234 Sqn., Vampire F.B.5, 112 Sqn., and Chipmunk T.10, 2 FTS.). No. 15: U.S.M.C. AV-8A Harrier, VMA-513, and U.S. Navy A-7E Corsair, VA-113 and F-4B Phantom, VF-111. No. 16: USAF-S.E. Asia (2); F-4E Phantom, 34TFS, 388TFV; O-2A, 23 TASS; AC-47, 432TRW., and USMC OV-10A Bronco, HML-267.

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McD. F-4B PHANTOM, VF-111, N.A.S. MIRAMAR 1971

MODELDECAL SET NO. 16

McD. F-4E PHANTOM 34th T.F.S. 388th T.F.W.
KHORAT R.T.H.A.F.B. 1970
OV-10A BRONCO, 155404 "25" HML-267 1970
AC-47 DAKOTA, DET. 432nd T.R.W. U.S.A.F. 1970
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NOTE. All Modeldecal sheets contain full markings to complete all models listed except sheets Nos. 1, 2, 7, 11, 12 and the Vampire section of 14, where the 'D' type roundels are used from the respective kits, as also is the Nat. Insign. for the F-102. However, the Hunter section only on No. 7 does include roundels. Harrier markings on No. 7 are intended to complement those in the Frog kit. Instrument panels included for all machines on sheets Nos. 7, 9, 10, 11, 12, 13, 14, 15, 16.

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Mitsubishi 'Betty'
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Caudron C-714
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58. Luftwaffe Vol.

New Kits—continued

Croydon, Surrey, who can supply by post.

Solido: 1:43 scale AFVs

THOUGH the Solido range of die-cast models is not new, there are some recent additions to the range which we had not previously studied in detail. We have had for review, models of the Tiger I tank (£2.81), Jagdpanther (£2.81), M20 Armoured Car (£1.18), AMX 13 AA tank (£2.35), and Renault 4 x 4 truck (£1.18). Except that they are to a larger scale, the finish and quality of these models is strongly reminiscent of the old Dinky military vehicle replicas. The Solido offerings are bigger and bulkier and we must say that tanks and armour, in particular, come out very well in die-cast metal, feeling cruel and looking cruel. The Tiger and Jagdpanther are interesting and well engineered. They both represent late production types with the late type vision cupola, all-metal disc wheels (reproduced in plastic), and the 88 mm gun common to each model. The tracks are beautifully made and are of riveted assembly, not 100% accurate but most effective. The idler on each chassis is sprung, giving a degree of flexibility over coarse ground. The Tiger as supplied to us comes in a very realistic sand/dark green finish (labelled inaccurately 'Afrika Korps' on the box) and had LAH formation signs applied sideways. The Jagdpanther comes in dark grey; a separate plastic machine gun is supplied for the cupola but is of the Browning type. These small points are easily corrected by the average modeller. The radio aerials supplied with all models are of thick, soft plastic and need replacing with wire or stretched sprue to give an improved appearance. The other models have some working parts: a folding radar aerial on the AMX 13 AA tank, removable tilts and folding windscreen on the truck, and a machine gun on a skate in the armoured car. These models are collectors' pieces in their own right, though not matching any readily available model soldier ranges. The importers in Britain are Model-time, 6 St George's Walk, Croydon, Surrey. Extra is necessary on orders placed by post. C.O.E.



Solido Jagdpanther and Tiger I, 1:43 scale.



The Hansa Brandenberg model from the Edison Air Line 1:72 scale range reviewed on page 512.

Faller: girder set

LATEST from the Faller firm of Germany is an exceptionally useful set of finely moulded girders and angle plates in OO/HO scale. There are four sprues with 16-20 assorted pieces to each sprue, not counting angle plates. Each girder is up to 5½ inches long and there are several sizes. The set can be used for wagon or truck loads but it really comes into its own for scratch-builders. Complete bridges could be built up, and other ideas suggest themselves, such as supports for water tanks, frameworks for houses 'under construction', and so on. At its modest price of 31p, this set is well worth getting. Some ladders are thrown in for good measure. Jones Bros of Chiswick supplied our sample and they can be ordered by post.

Our review of the Faller scenic book last month quoted a price of 75p; this was a misprint for 15p and we apologise for any inconvenience this may have caused.

C.O.E.

Lasset: 54 mm scale accessories

ALL readers familiar with the superb Lasset range of white metal figures will find these new accessories well up to their usual high standard. Covering the French Napoleonic and Third Reich periods, these accessories are mouldings of various weapons and equipment that can be added to the standard figures, either as replacements for their existing armament or as background detail for a diorama using 54 mm figures. Items in the range include two different types of German packs, standard German infantry equipment, an MP40 and ammo pouches, three standard German machine-guns and various other items. In the Napoleonic and general ranges there are a number of entrenching tools, muskets, swords, etc. Prices for this range are from 6p to 50p. Further details can be obtained from Jones Bros, 56 Turnham Green Terrace, Chiswick, W4, or direct from the manufacturers.

D.L.

Heller: 15th Century Catalonian Carrack Le Mataro

DISTRIBUTED by Riko at a price of £1.55, this 48 part kit is based on a shipbuilder's model in the Prinz Hendrik Maritime Museum, Rotterdam. The model was originally at Mataro, Spain, and it is believed to have been used as a guide to the building of the *Nina* and *Pinta* for Columbus, which puts it at about 1490. The model appears to be in 1:76 scale, making up to a length of 8½ inches, with a beam of 2½ inches, main yard 8½ inches, and an overall height of 12½ inches.

Some of the moulding is excellent, particularly the hull, decks and rudder, but other parts have been missed—the

boat carried on deck is a mere shell with no interior and only rubbing strakes on the exterior. The joints in the mast need some work to get a decent finish and the shields ranged round the after castle are too large, otherwise the fit of the parts is very good. Instructions are adequate—most work can be done from the detailed drawings—but the English translation does need careful study before starting work, especially where the rigging is concerned, the text and drawings for this being on separate pages. There is a complete colour guide, helped by the box art, an important point as all parts are moulded in black and require painting. The flag, printed on gummed paper, is fine, but we found it best to paint on the other markings, particularly since the shield designs were no longer usable. With careful painting and handling, a good sail can be made—always vital in ship models like this with a large sail area.

Being relatively simple, this kit would be ideal for newcomers to sailing ship models, or would make an interesting vessel for a collection showing the development of sail. It is also of value to wargamers who include sea operations in their activities. The carrack is an important point in this development, its rig being 7,000 years old and, at the date of this model, already being superseded by more sophisticated systems.

T.W.



Above: These three models are from a fine new range of metal 1:2.5 scale replicas of small arms types in the new Armodelli range, distributed in UK by Model-time Ltd, 6 St George's Walk, Croydon, Surrey. We shall be reviewing these in more detail in the next issue. The models shown are the Franchi LF 57 (£4.05), Mauser 7.63 (£1.40), and Remington 44 (£1.25). Below: Historic French paddler 'Occident' is a splendid addition to the Heller range, very beautifully detailed and about 1:100 scale. It is roughly 12 inches long and similar in style to the Airfix 'Classic Ships'. Price £3.87.



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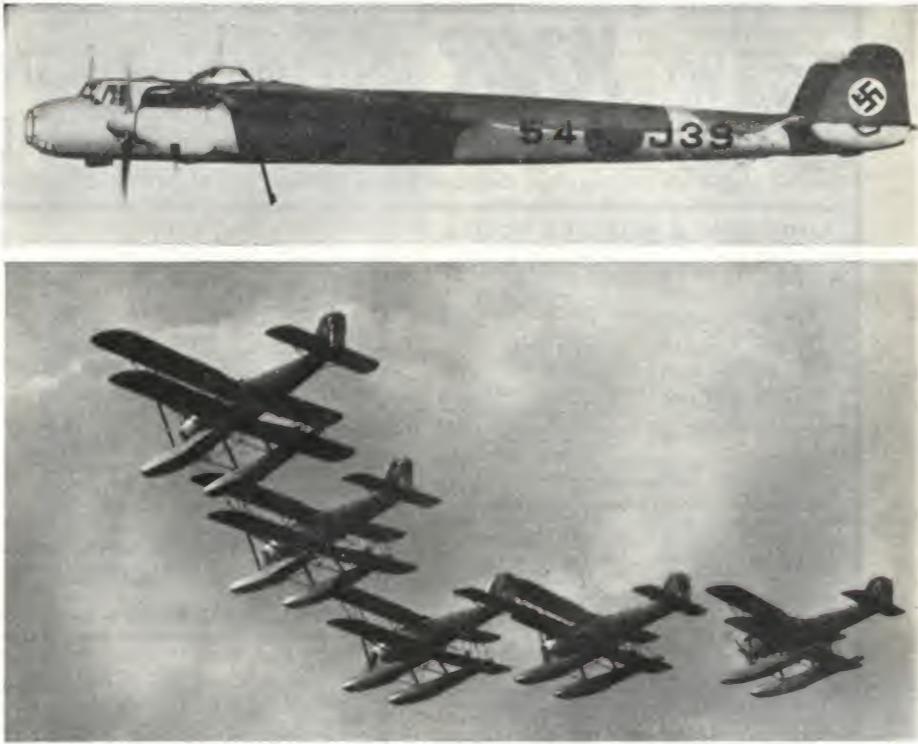
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photoPAGE

More rare pictures from readers with captions by Michael J. F. Bowyer. A free Airfix kit is awarded for every picture published, but please note that there is usually a delay of some months before publication due to the limited space at our disposal.

4



Key to pictures: (1) A pre-war picture of a Dornier Do 17 'Flying Pencil', probably in dark earth/dark green/light blue. The fuselage cross has been overpainted with a disc, it is thought as a distinguishing mark for 'enemy' aircraft in an exercise. (2) Heinkel 51s in flight, about 1937. Aircraft second right is coded 56-B15. Colour of these machines is light grey with red tail bands (both photos from Joop Wever). (3) Sea Fury WJ237:113/0 of 807 Squadron, HMS Ocean, on a sortie over Korea in 1951. Note the second '1' of 113 outlined over a black recognition band, and the heavy exhaust staining. (5 & 6) Lancaster X RE1518:BS-B of Coastal Command after crashing at RNAS St Mervyn on October 10, 1949. Note squadron badge and serial position above tailplane (three photos from A. Whitby). (4) Reader J. Wilton identifies RN Oxford NM733 as 'Silver Lady', shown in this nose close-up. His father worked on the plane which was first illustrated in the March issue. (7) 'Libyan Clipper', a captured Ju 52 used by 216 Sqn in Libya, 1941-42. It carries B type roundels (M. G. Corneau).

1

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Letters to the Editor

Japanese Modellers

BECAUSE of the unavailability of pictures showing the outside and interior of foreign AFVs in Japan, it is difficult for us to make exact models of them, as can probably be seen from the



Top: Mr Sogawa's Japanese Army Renault FT. Above: Mr Kondo's Elefant. Both are scratch-built in 1:32 scale.

accompanying photograph of an Elefant made by my friend Mr Kondo.

It is difficult to obtain drawings and photographs from firms outside Japan so as a last resort I decided to try *Airfix Magazine* to see if any readers would be willing to send such material to me. In return I will send a model of a Japanese tank.

Shunichiro Sogawa,
4-6-7 Daizawa, Setagayaku,
Tokyo, Japan.

Cover picture

I WISH to point out in the October '71 issue of the *Airfix Magazine* that the caption describing the South African Air Force Harvard T6G (No 7723) in the cover picture is incorrect.

This particular aircraft was photographed at Youngsfield, Cape Town, and the squadron badge carried on the side in fact indicates a 7 Squadron and not a 5 Squadron aircraft. This Harvard is still in service with 7 Squadron.

Capt. D. E. Page, Cape Town, RSA.

Hunter addition

IN Alan W. Hall's Hunter T7 (*Airfix Magazine*, March 1972) conversion was included a photograph of Hawker's demonstration Hunter T6A. This may appear misleading as the conversion for this is not the same as the one he described. The real aircraft was a two-seat nose joined on to the airframe of a crashed Belgian Air Force F6. Therefore the modification to the tail cone is not necessary and only the nose has to be replaced. It was painted scarlet, white and black and registered as G-APUX (the only Hunter on the British civil register). In 1963 it was lent to the Iraqi Air Force sporting camouflage, Iraqi mark-

CONTRIBUTIONS

Letters to the Editor selected for publication entitle the senders to each receive a free Airfix plastic construction kit, and the publication of photographs from readers is similarly rewarded. Airfix Products Ltd award the kits on the following scale:

ONE letter or photograph published is rewarded by any kit from Series 1-6 inclusive. For TWO letters or photographs any one kit up to and including Series 9 can be chosen, or alternatively two kits up to Series 6. For THREE separate contributions (eg. photographs) the entitlement is one kit up to Series 12 or three kits up to Series 6. Readers can make their choice on the special card which we send out after publication. The kits are supplied direct by Airfix Products Ltd.

We receive a large volume of mail from readers; all letters are read and we answer or acknowledge as many as possible provided that a SAE or stamp is included for reply. The Editor cannot accept responsibility for safe keeping of contributions though every care is taken. Opinions expressed by correspondents on this page are their own and do not necessarily reflect the views of the Editor or Airfix Products Ltd.

ings and serial 567. Iraq lent it to Jordan and Lebanon where it carried no national markings. It was returned to Hawker in 1966 where it was reduced to primer finish and registered G-9-232. It was rebuilt as a T72 which has the modified tail cone and sold to Chile. It is now in service with the Chilean Air Force with camouflage finish and serial J718. I hope these notes will prevent modellers making this aircraft, modifying the rear fuselage by mistake, and provide them with varied markings. Maybe someone may even model its entire history (the Belgian F6 serial was IF-19).

Donald Stirling, Renfrewshire, Scotland.

RAF B-29

REFERENCE to the Editor's comments on Mr P. Finch's letter (*Airfix Magazine*, March 1972) concerning USAF serials on Royal Air Force B-29 Washington aircraft, as an ex-Washington crew member, I can vouch for the accuracy of this statement that such markings were visible only under certain lighting conditions, and that in point of fact, all US insignia and serials were erased from these aircraft prior to handover to the RAF.

Due to the weathering effects of the atmosphere, oxidation of the aircraft's aluminium plating occurred. The painted areas were to a degree protected, thus on removal of the US markings, a perfectly etched representation of the original remained when viewed from a distance.

A. R. Cummings, Ruislip, Middlesex.

Invader corrections

RECENTLY I purchased an Airfix Douglas B-26 Invader. It is an excellent kit, but suffers from misleading colour instructions for the 'Miss Monie' variant.

The instructions tell you to paint all of part 142 except the bomb aimer's window. This is incorrect. Part 142 as in Part 143, should be completely unpainted (except the framing around the bomb aimer's window). Two excellent photos in *Scale Models* show

this clearly.

From what I can make out from these photographs, all undercarriage legs are dull natural metal. The nosewheel door has no markings at all.

Also noticeable in the photograph are small white dashes which appear around the cockpit (similar to that seen on our naval Gannets). The measurements (to the *Airfix Magazine* drawings scale are 3/48 inch spacing is 2/48 inch and each dash is 1/48 inch long).

Some other additional details; the propeller hubs are dull natural metal, (not black as per instructions); interior of the cowlings was dirty, dull natural metal. The propeller blade edges are worn so I suggest adding a little silver paint to them to simulate this.

A. M. A. Holland, Tonbridge, Kent.

Aaron's VC

I SHOULD like to correct two statements made by Mr Bowyer on page 394, March edition of *Airfix Magazine*. On this page he briefly refers to the action in which Flt-Sgt Aaron of 218 (Gold Coast) Squadron won the Victoria Cross. For the sake of future historians who may use this article for research purposes, I feel that the record should be put straight.

During research for my book *Challenge in the Air* I had the official records of the MoD Air Historical Branch at my disposal as well as the account of the incident in Ralph Barkers' book *Strike Hard, Strike Sure*, and the facts are: Aaron's Stirling was fired at and hit by the rear gunner of another Stirling and not a night-fighter. It is possible that the Stirling was a captured one being operated by the enemy, but this fact has not been verified. It is certain however that it was not a night-fighter that fired on Aaron's aircraft. Secondly the gallant Flight Sergeant did not stay by the bomb-aimer but was moved to the rest compartment by the crew and only returned to the flight deck, on his own insistence, when the aircraft was trying to land at Bone. During the flight he was under heavy sedation but during periods of awareness he was kept informed of the position and gave instructions with written notes. Flt-Sgt Aaron died nine hours after the landing at Bone.

I appreciate that the writer was only trying to cover this event in very brief terms but feel that the actual facts should be made known to readers or the author of the article, for the sake of accuracy.

Bryan Philpott, Newbury, Berks.

Lincoln supplement

I WISH to comment upon the letter by Mr J. D. Whittle in the March issue of *Airfix Magazine* in connection with the photograph of the Lincoln in the January issue.

As I was present when this photo was taken, I can confirm that the year was 1956, the precise date being August 19, 1956. Mr Whittle's father is correct in assuming that the occasion was a Royal Observer Corps Group Meeting, but the RAF Station was Church Fenton, not Colerne.

The Lincoln in the photo was RF412 from the Central Gunnery School, Leconfield and as a matter of interest, the spinners, just visible in the picture, were red in colour. The Brigand in the background was RH832, the subject of a picture in *Photopage* (*Airfix Magazine*, August 1971) and in this picture, Lincoln RF412 can be seen behind the Brigand, as both photos were taken on the same day.

As Mr Whittle correctly states, the gentleman in the foreground is a Leading Observer and I should mention that he continues to serve in this capacity almost 16 years later.

Eric Taylor, Benton, Newcastle-upon-Tyne.

Tank tracks

I HAVE been converting and scratch building aircraft for some years, but recently tried my hand at military and AFV subjects for a change. This posed interesting and new problems, and others may find my solutions of interest.

I have built the PzKpfw 38(t) (*Airfix Magazine*, March 1970). As I have already built kits at 1:76 and 1:35 scale I decided to double all dimensions of the scale drawing thus making it 1:38 scale.

There were no problems in building this larger scale from plastic card, but the wheels, running gear, and the track were a different matter. As the model is static, I found that the plastic tops from tubes of Smarties were ideal for the wheels—and the sprocket wheels were easily prefabricated from plastic card spaced by an old ball point pen cut to appropriate sizes. Incidentally the cupola on the turret was also a Smartie top.

The track was rather more difficult, but eventually I hit upon the idea of trying the flexible plastic of a washing up liquid container, track details being cut with a file. Adhesive for this kind of plastic was a problem, but I found that while heat sealing was more difficult, it was quite possible to join track ends by this method. For fixing the track to wheels and running gear, I found that Aqua Toys cement sold on the toy counter at Woolworths for repairing inflatable plastic toys was ideal. It must be left overnight to set, and sag on the track must be kept in position until fully set. When this is painted it is quite passable, although it doubtless would be possible to add more detail should one be so inclined.

I have also found a very quick way to produce a diorama base. The thin plastic packing in tins of biscuits, when subjected to gentle heat, tends to return to the square flat form before the pockets were punched into it. These form realistic landscapes, and flat road areas can be made by ironing (over a newspaper to protect head of the iron) with the setting turned down as low as you can get it. Staple the results to a corrugated cardboard base—and paint does the rest.

Raymond Prideaux, Sunderland.

shakos were slightly 'belled' and taller than the busby of the kit. There was a wide band of white lace around the top, and a red and yellow rosette on the front, connected to a yellow pom-pom by a loop of yellow lace. Officers had an upper band of silver lace, with a lower band of interlaced gold rings; their rosette was gold. Red and yellow (or red and gold for officers) caplines, yellow metal chin-scales, and a black peak and turned-up back peak completed the shako.

In about 1814 the red facings of the 10th were changed to dark blue, and these were worn at Waterloo. The barrelled sash was crimson and yellow (crimson and gold for officers). Officers had gold laced belts and slings, and the officers' 'service' sabretaches were of 'crinkled' brown leather. Around the braiding of the pelisse was probably a wide band of lace, known as the 'frame', but evidence for this is inconclusive. Pelisse-fur was black for other ranks, and white or grey for officers. Overalls were grey-blue for troopers, with fawn leather strapping and a yellow stripe; officers had bright blue overalls, with fawn strapping and a gold stripe.

The shabrage shown in the model is that used for full dress; on campaign, only the officers used shabragues, these being of plain blue, with a single, broad band of gold lace around the edge.

The conversion of the kit from full to service dress is relatively easy, the busby being transformed by the addition of a peak and heightened with a disc of plastic card; all the rest merely requires a change in colour.

Incidentally, the Coldstream Guards figure looks extremely effective when the shako is modified slightly to represent the oilskin service dress cover. The shako can also be converted very simply into the 'Barrettina' pattern worn by the Portuguese army in the Peninsular War, and by the French Légion Portugaise; this opens a further field for the modeller. All these notes are based on contemporary illustrations and documents, a far more accurate source than modern reconstructions.

Congratulations once again on two excellent figures, which I hope will be the first of many!

P. J. Haythornthwaite, Nelson, Lancs.

Cockpit canopies

I HAVE discovered a quicker and less difficult method of moulding canopies, which I know presents many difficulties to modellers.

This method can only be used when the nail varnish method is used. This being when a piece of balsa is carved for the mould, sanded smooth and then a series of about fifteen coatings of clear nail varnish are applied, being careful of course to allow each coat to dry before re-coating.

Instead of using balsa for the mould, it is carved from paraffin wax, which is obtainable from a good chemist at quite a low cost. It is more easily carved than balsa, and shapes very easily; neither does it need to be coated with margarine before applying the coats of varnish.

I feel sure that this modification will help to solve the problem of moulding canopies. The canopy comes off the mould very easily, in the same way as with the balsa, by running a craft knife round the edge of the mould.

A. Baldwin, Spondon, Derby.

Bombing Colours—from page 511

Limited use was made in 1944 of the Halifax B VII, then came the Mk VI initially used by 102 Squadron from February 1945. By then a fair proportion of 4 Group's Halifaxes, apart from wearing elaborate tail markings, had yellow outlines to their codes as on H7:N-NP763 and later Mk VI RG510:DY-K. The VIs all seem to have had radomes as carried by EY-E:RG652 and MP-K:RG496.

Examples of Halifaxes with extended rounded wing tips include KN-G: MZ359 (with H2S), QO-A:NP755 (H2S), PN446:DT-V (H2S) and PN367:AL-J in use March 1945. But the aircraft were mixed on the squadrons, 78 Sqn at one time including EY-B: MZ764 (H2S, rounded tips), EY-D:LL602 (ventral guns, square tips), EYQ:LW236 (square tips, no H2S) and EY-X:NR113 (rounded tips, H2S).

Halifaxes of 100 Group carried varying assortments of aerials. Z5:S (Z5 forward on the port side, aft on starboard) had two tall masts above the fuselage, and one below the nose, ahead of which was a short one. Another of the squadron's aircraft had five short masts on the belly ahead of the H2S radome and two aft between which was a long one. In contrast to these were the remaining Mk IIs in training units, one of which I noted, a Mk II Series 1, on October 7, wearing the red letters GG-V (GG aft on the starboard side) with a small white '4' in the squared position by the V. She came from 1667 HCU Sandtoft.

In January 1945, the Mosquito Light Night Striking Force consisted of ten squadrons. Apart from a few Mk IXs and XVIIs in 105, 109 and 692 Squadrons, with black under-surfaces, these aircraft wore Ocean Grey-Dark Green-Medium Grey finish with red codes and black serials. Code positions varied, 571 Sqn favouring unit letters forward on both sides of the aircraft. Many of the 8 Group Mosquitos were Canadian-built Mk XXs and XXVs, variously equipping seven squadrons. KB225 was XD-P of 139 Sqn, which also used KB217:XD-H. KB439 was 4H-G and KB397:4H-P of 142 Squadron. No confirmation has come of the unit coding of 163 Squadron, Wyton, so perhaps a reader can fill this long-standing blank. Three of its Mosquitos were KB505:A, KB510:B and KB474:C. One unit displaying original trim was 571 Squadron, whose aircraft in 1945 had their spinners painted in Flight colours.

The most interesting Mosquitos were to be seen at Little Staughton and Bourn. Both housed three Flight squadrons which painted bars under the serials of their C Flight aircraft, HS-O being LR498. Among the interesting Mosquitos of 105 Squadron at Bourn on December 16 1944, was PE407 wearing a grey-green-black finish with red serials and blue codes. Narrow white rings surrounded the fuselage directly forward and aft of the roundel to denote her an Oboe leader for day operations. Her nose transparencies were over-painted. GB-F:LR507 was another black machine with blue codes, like LR513:GB-E, both of which had painted nose transparencies. RV303:GB-J, seen a few days later, wore the usual 'day' camouflage but had white codes. A most unusual one in use at the end of 1944 was LR504:GB-H which had night finish and during 1944 displayed varying arrangements of AEAFAF stripes reduced to under belly white bands by December 1944. Very few aircraft in Bomber Command had them other than 100 Group Mosquito fighters.

Over-painted noses were also a feature of 162 Squadron's H2S equipped aircraft. In December 1944 these were KB191:CR-L, KB214:CR-M and KB184:CR-R.

Quite rare because there were so few of them were the Fortress IIs and IIIs of 214 and 223 Squadrons and Liberator IVs of 223 Squadron, 100 Group. These were finished in Dark Green/Dark Earth/Night, usually with red codes. One of the Liberators I saw was 6G:L. Her ball turret had been removed and she had a tall radio mast amidships, and a shorter one a little way forward, and was from 223 Squadron. This unit carried its squadron codes aft. Other IVs used were: 6G-N:TS532 and TS528:6G-R. Crews for 223 Squadron were trained by No 1699 Flight, whose Liberators included TS538:B.

Fortresses generally had a Dark Green/Dark Earth/Night finish with red codes and serials, but there were some exceptions. On January 14 1945, I noted that Fortress III BU-B:KJ110 (unit codes forward) with chin H2S radome and a tall radio mast

Right: Ready later this year in the Tamiya range will be this 1:35 scale Jeep with four-man crew of US troops. Dummy engine is featured.



amidships, was a very matt black overall. This was somewhat unusual for the Night finish had long since taken on a much smoother, slightly shiny, finish on many aircraft. On March 23, I recorded another Fortress in the standard camouflage scheme but with a white letter B aft of the fuselage roundels. She had an array of radar aerials flanking the rear guns and the usual tall radio mast. Next day I noted 4Z-X (unit codes forward) applied in yellow on a camouflaged Fortress and a few days later another with yellow codes, 4Z-K. Fortress crews were also trained by 1699 Flight, whose aircraft included HB793 and HB818. The Mk III came into operational use on 214 Squadron in July 1944—previously Mk IIs were used.

What made wartime spotting so exciting was that the scene, wrapped as it was in secrecy, offered so many surprises. Squatting by 'E' Hangar at Farnborough on September 30 1944, was the prototype Mosquito PR XVI, a Mk IV bomber converted. This, DZ540, was finished Ocean Grey and Dark Green with yellow under-surfaces extending half way up the fuselage. The yellow prototype marking was partly outlined Dark Green. A few moments later the prototype Windsor NK136 in Dark Green/Dark Earth/Yellow finish passed over quite low from Wisley. Next I noted a Vengeance FD218 in grey-green-grey camouflage. With her was another black overall and with a red serial. A few weeks later I found a Ventura AJ181 where that Mosquito had stood, with a red 'B' aft outlined black, and nearby an RAF Marauder in green/grey finish, FB482.

Although the war in Europe ended in May 1945, the setting of the Rising Sun in the Far East looked far from certain. Avro had worked for some years on a version of the Lancaster with sufficient range to hit Japan from distant bases, and 'Tiger Force' was to operate the bomber. This, the Lincoln, was from the start intended purely for the Far East. The first production machines were being built by the start of 1945 and delivery of RE230 was made on February 26. Soon the RF series were following and by VE-Day those up to RF251 had been delivered and RF339-34L were then being erected. All had Dark Green/Dark Earth/Black camouflage with Dull Red serials. None had reached squadrons before the unconditional surrender.

But what in general of those bombers of yesteryear? What would one recall years later when they had passed into memory? I think that I look back with a fast pulse rate to my 'first Blenheim', to seeing the 'LT' coded Whitleys on Cambridge Airport, where one was to come to accept but a relatively few months later Highball Mosquitos intended to sink the *Tirpitz*. I shall never pass Waddington without thinking of the Manchesters there on dispersal, and I could never pass Oakington without recalling dear old N3641, pictorially famous as MG-D, the first Stirling I ever climbed aboard—and on the very day that the Stirling first went into action, I still vividly recall SB-L and the rest of the huge Ventura formation, literally at roof-top level during a practice for the Eindhoven raid of December 1942, and on a bright sunny day it's easy to visualise the boxes of Bostons and Mitchells that ever seemed to be heading for somewhere near Caen. Then there were the Wellingtons which always characteristically drift on take-off, and those nose down Whitleys... they were such strange beasts. My first viewing of a Halifax was of TL-B which a few moments later ignominiously skidded to a belly landing. Of the Lancaster I was to accumulate a mass of memories, the most exciting of which I suppose must have been of a hedge-hopping trip across the Fens from Mildenhall. But which of my recollections would I come to rate as the most astonishing? I think it must be a lumbering Whitley towing a parachute! Yes, LA893 was towing a braking parachute round the Farnborough circuit in March 1945. Those were, indeed,

Michael J. F. Bowyer

AIRFIX magazine

Airbrush—from page 503

and also it is only necessary to spray water through the brush to clean it.

Proceed with care and caution, remembering that an airbrush is a precision piece of equipment, and progress from stage to stage as each is mastered. Never rush, and be prepared to have many attempts before the final result you are looking for is obtained. The end result will more than pay dividends for the time spent.

A final word on the form of motive power for the airbrush. It is essential that some form of compressed air is available. The Humbrol aerosol propellants will operate the Badger in the same way as that company's own propellants, but modifications will need to be made to the air-line on the DeVilbiss gun if this form of propellant is to be used. The most economical method is to obtain an electrically operated compressor, which is available from about £31. With this it is simply a question of plugging into the mains supply, connecting the airbrush and starting to spray, with a constant source of compressed air. Foot-operated compressors are also available which are, in the long run, more economical than the aerosol cans and also have the added benefit of developing one's leg muscles!

There is no doubt that the acquisition of an airbrush will open a complete new vista to the modeller and bring more authentic finishes into the grasp of everyone who decides that the initial outlay is well worth it.

Right, top: Fine camouflage finish on a USAF Phantom. **Right:** The 'feathering' between colours well-shown on this P-40 model with airbrush finish, made by Captain C. King, USAF.



In the Air—from page 481

collection of preserved aircraft.

Joining the Saro Skeeter and Focke-Achgelis is a little-known Murray Helicopter, whilst the first glider on the NAPS list, a standard training machine built by Mr E. W. T. Addyman in the mid-thirties, is being rebuilt at Alder Grange County Secondary School, Rawtenstall, by young enthusiasts during wood-working classes.

John Murray, who designed and built the helicopter, was originally an aeronautical engineer instructing apprentices at the Fairey Aviation Company's Stockport works. He set out to produce a helicopter which would bring rotary winged flight within the means of the private owner and adopted a layout reminiscent of a helicopter built in America in the '40s. A JAP engine from a Slingsby Motor Tutor was used as a power plant.

Although permission had been obtained for engine running and

tethered flight trials, Mr Murray had meantime started his own motor engineering business and the pressures of this and the high cost of insurance compelled the designer to put his plans into abeyance. The aircraft has been carefully stored for a number of years and now Mr Murray has given it to NAPS for preservation.

The glider was one of three operated by the Harrogate Aircraft Club between 1931 and 1935. It was put into storage when the club ceased operations through lack of support and was forgotten until 1965 when the Addyman estate was purchased by the local council. Now students at the school have started rebuilding the wings and when restoration work has been completed the glider will be placed on permanent exhibition in the Bradford Industrial Museum together with a second more recent type of training glider.

Napoleonic Wargame—from page 483

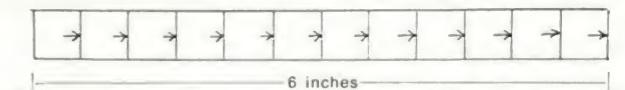
divisions, and an Army two or more Corps. Each of these formations has a figure representing the commanding general, usually mounted. Each general has one or more mounted figures on his staff as couriers.

Note above that the word 'formation'

has two uses: one to describe a command function, and one to describe a tactical layout. This confusion is contemporary, not of my making. 'Division' also has two meanings: a number of brigades grouped together, or two companies alongside one another.

I have set out as briefly as possible how to play a Napoleonic Wargame. I have also shown what Napoleonic units should look like during play. I hope this has helped your understanding, and you will try a game for yourself.

Below: Column of Route (used only on roads)



Below: Simple wargames layout with card strips for roads and Merit free-standing trees and other model railway accessories.

Below, right: Contours and hills are best made from ceiling tiles.

In 'terracing' these give a firm base for model soldiers.



Books—from page 487

Go Plastic Modelling, with 11 chapters of informative text, over 110 excellent photographs, and over 100 drawings, the latter including layout plans, wiring diagrams, conversion sketches, and so on. The book is wide ranging and very up to date, of course, in its coverage of scales and products. Just about every conceivable aspect of railway modelling is discussed in some detail, and there are ideas by the dozen for anyone who wishes either to get started in railway modelling or improve on an existing layout. One valuable feature of this book is the erudite way the author considers ideas in relation to all the different scales, explaining, for instance, how a problem can be tackled in 00 scale compared with the identical problem in N scale. Particular aspects of importance to beginners which are well covered in this book include layout planning, track laying, and the initial choice of gauge and scale, all of which are discussed in great detail. There is an excellent set of appendices which gives lists of clubs, societies, stockists, manufacturers, and even locomotive kits in the various gauges. For anyone interested in railway modelling, either as a beginner or an expert, this absorbing book is required reading.

MILITARY

Battle of Tewkesbury. A Roll of Arms.
Geoffrey Wheeler.
Gloucester Group Publications,
57 Clarence Avenue, Cliftonville, Kent.
30p.

FOR those who are interested in the Wars of the Roses, and who read the article on the Battle of Tewkesbury in the April issue of this magazine, the above book should hold hours of fascinating reading. Listed within its slim covers are the names and Heraldic charges of all those knights who are recorded as taking part in the battle. Each knight has a full 'dossier' with years of birth and death, if known, parentage, and Coat of Arms described in full Heraldic terms, with, where there is little contradictory evidence, a line drawing of the actual shield charges.

An absolutely invaluable book for anyone wishing to model this period of history. It is suggested, however, that the reader should have a basic knowledge of Heraldic terms or find out about them before attempting to read this book, otherwise you may become slightly lost when coming to one Sir Robert Knollys whose family arms may have been: Gules a chevron argent charged with three roses gules.

Wargames Order Pads.
Shire Publications Ltd, 12B Temple Square, Aylesbury, Bucks.
45p each.

SHIRE Publications have produced, in conjunction with their books on wargaming, a complete set of wargame order pads covering map movement, battle orders and naval warfare. Each pad is nicely produced and contains 50 sheets divided up into the appropriate sections, eg, unit, time of move, etc. There are four

pads in all, two for land games and two for 18th Century Naval Warfare, all of which should be a boon to the wargamer who has to laboriously rule out his own pads every time he wants a game.

'Discovering' series.

British Military Uniforms.
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J. Wilkinson-Lathom.
Shire Publications Ltd, 12B Temple Square, Aylesbury, Bucks.
30p each.

THESE new books in the useful 'Discovering' series have plenty of line drawings illustrating their subjects. Written in a concise style, they give all the basic information you could possibly want, and will probably start you off on the hunt for more advanced data, which is exactly what the series is designed to do.

The last two books on Artillery and Edged Weapons have central photographic sections showing some unusual weapons and, in the artillery books where there are no photos available of a particular weapon, photos of either models from the Royal Artillery Institution at Woolwich or the superb Hinckliffe cannon have been used.

Additional data covered in the aforementioned books are sections on making model cannon from bits and pieces, and how to identify makers' markings on swords; a particularly useful section this, especially for anyone who has an old sword in his attic and wants to identify it.

American Soldiers of the Revolution.

Alan Kemp.
Almark Publishing Co Ltd,
270 Burlington Road, New Malden,
Surrey.
£1.50 (paperback); £2 (hardback).

VERY comprehensive in its coverage, this book deals with all American troops involved in the War of Independence, both the Loyalists and the Patriots. There is a long and detailed text, supported by numerous drawings of uniforms and equipment. There are eight colour pages which each show four or five soldiers in uniform and one colour plate of flags and standards. It should be a handy reference for anyone painting up the Airfix 'Washington's Army' figures.

Military Vehicle Markings.

Terence Wise.
Model and Allied Publications Ltd,
13/35 Bridge Street, Hemel Hempstead,
Herts.
75p.

THIS useful little book is a reprint of the original series done by this author in *Scale Model* some time ago. Covering in fairly concise form all the divisional signs used by Britain and her allies in two World Wars and those of Germany in the Second, although the German ones covered are mostly those of the Panzer and Panzer-Grenadier Divisions with a sprinkling of Mountain, Cavalry, Foreign Legion and ordinary infantry divisions. Surprisingly enough,

one of the most famous wartime signs is missing, eg, that of the Afrika Korps. A truly amazing omission.

Each unit's insignia is drawn in black and white with shading to represent the various colours. A brief résumé of the operational life of the unit, together with the reasons for choosing that particular symbol, if known, are given below each individual sign.

Altogether a very useful pocket-book for the wargamer or modeller who wants to complete his models in authentic unusual or distinctive markings.

A Guide to Military Museums.

Terence Wise.
Model and Allied Publications Ltd,
13/35 Bridge Street, Hemel Hempstead,
Herts.
45p.

A REVISED edition of a very popular work, this book covers all, or nearly all, the museums, castles, collections and places of military interest open to the public in Great Britain. Arranged in alphabetical order, it gives details of times, price of admission, if any, the easiest way to get to any particular museum, items covered, and anything of interest nearby.

An extremely useful book to have by you when planning your holidays. You may be surprised what you come across!

Sails wanted

Reader C. T. Stobbs of 97 Dalewood Road, Sheffield, Yorks, S80 EE, specialises in making architectural models depicting aspects of industrial archaeology. For a particular project he needs the four sails from an Airfix Windmill, a kit which was withdrawn several years ago. This kit has long disappeared from the shops and cannot be supplied by Airfix. If anyone has a broken or discarded windmill model from which the sails could be salvaged, Mr Stobbs would be delighted to receive them. Anyone who can help please contact Mr Stobbs direct.

Would J. C. Strickland and R. G. Ledieu, whose aircraft photographs appeared in the December 1969 issue of this magazine, please contact the Editor with their present addresses.

Medieval Town—from page 485

Curtain: Stretch of wall connecting gates or towers.

Machicolation: Opening in floor, usually overhanging gate or wall, through which missiles, etc, can be dropped on attackers.

Merlon: Solid part of the parapet.

Murder Holes: Usually applied to arrow slits in interior walls of barbican. For example, in the model an attacker entering the first gate would find himself confined in a small space, fired on from all four sides from parapet and arrow slits. In such a position the result of fire from these arrow slits would indeed be murder.

Pomerium: Road round the defences, behind the walls, giving rapid access to all parts.

String Course: Thin horizontal line of stone projecting beyond the wall face.

Wall Walk: Pathway along top of wall, often continued through towers and over gateways.

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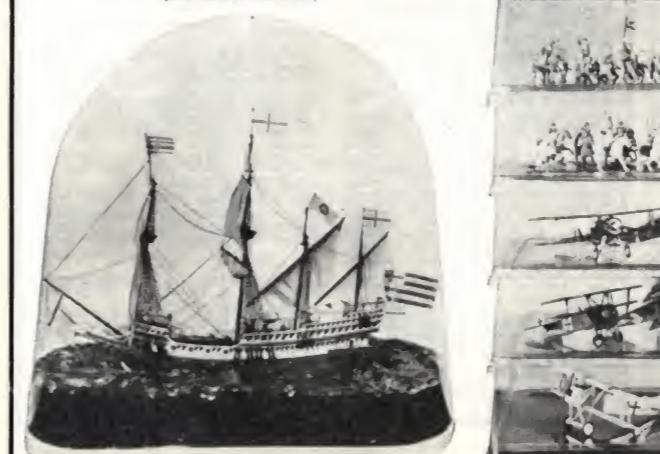
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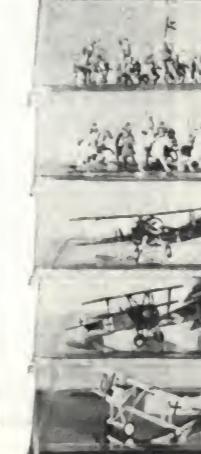
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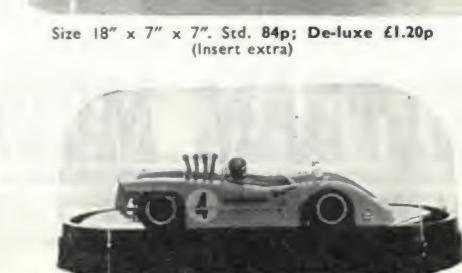
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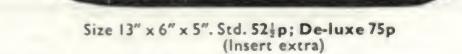
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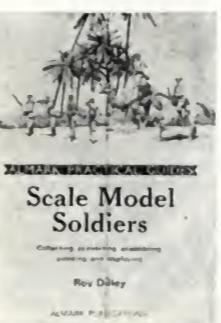
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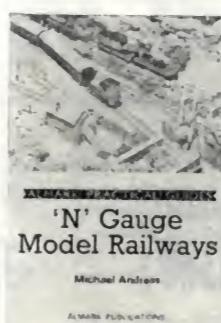
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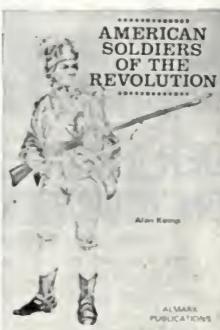
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It's a question that strikes coldly on the ear of the middle-aged. A generation has grown up which may not even have seen the film 'The Dam Busters', much less remember the real-life chapter of a famous RAF squadron. For a generation to whom Agincourt, Trafalgar, and Waterloo are more familiar names than Möhne, Eder, and Sorpe, we briefly retell the splendid story.

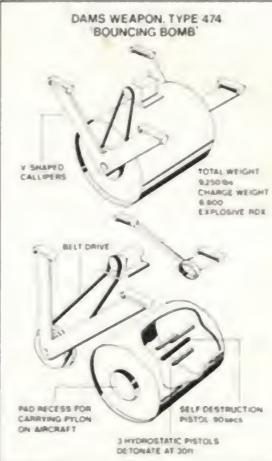
To compress into a few sentences years of work and frustration, Barnes Wallis invented the bouncing bomb. The task he set himself was to devise a bomb that would skip over protective anti-torpedo nets, make contact with the up-river side of the dam structure, and then slide down the face of the dam to explode exactly thirty feet below the surface. In the end (as we now know), he succeeded perfectly. But he relied on others to deliver the bomb—or rather the many bombs to be aimed at a whole series of dams in the Ruhr Valley.

Early in 1943, Guy Gibson was chosen to form and lead the Lancaster squadron that was to be

"617 SQUADRON? NOW WHO WERE THEY?"

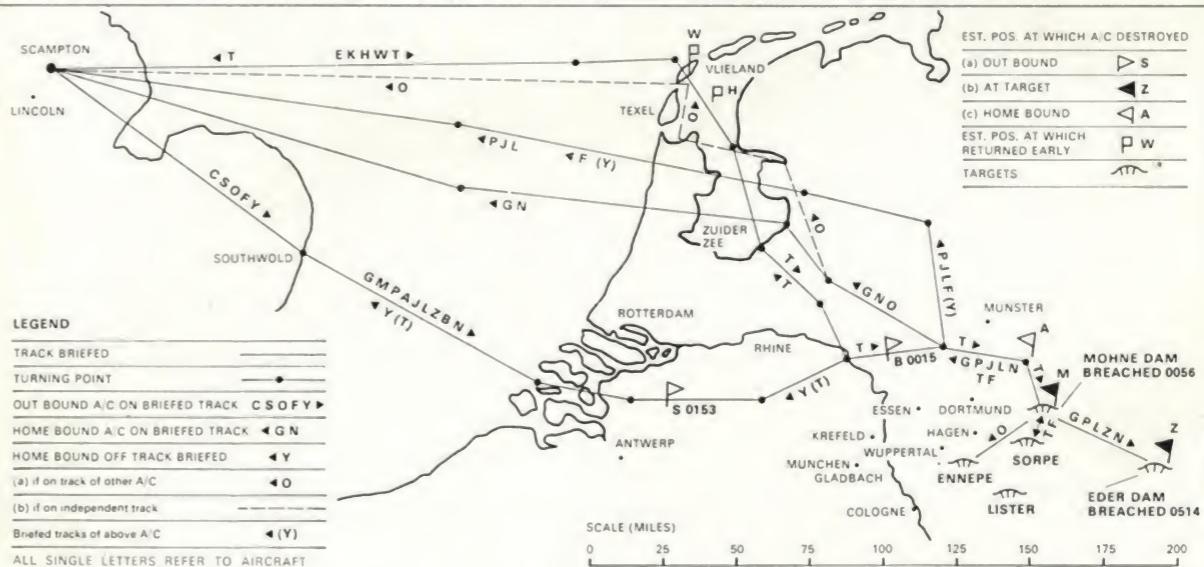
identified as 617. Not yet twenty-five, he was already a Wing Commander with exceptional experience over Germany, and a DSO and DFC. He had to learn—and train his men in—utterly new bombing techniques. The squadron's Lancaster bombers had to fly at a speed of 240 miles an hour and at exact 60 feet above the surface of the water, releasing the bomb 450 yards from the dam. No altimeter was exact enough to ensure accuracy of height, so two spotlights were fitted beneath the Lancasters at such an angle that their beams would converge at exactly 60 feet. So the aircraft on this most precise of all raids would actually be carrying lights!

The month of May was chosen for the raid, because the dams would then be holding back the maximum tonnage of water. The first aircraft



took off at 21.10 hours on the 16th. Nineteen Lancasters in all took part in the raid—a total of 133 men. Some, like Gibson himself and his crew, were involved in two attacks (on the Möhne Dam and then the Eder) in the one night. One crew approached the Möhne Dam no fewer than six times before getting into position accurately to release their bomb . . . and returned safely home, though without the aircraft. They were shot down crossing the Dutch coast, and picked up from their inflatable dinghy. Two aircraft were shot down with a total of three survivors who became prisoners of war. Some never even reached their targets. Of the 133 who set out, only 80 survived.

But the operation was a success. Over 300,000,000 tons of water swept down the Ruhr Valley, accomplishing (in the words of the official German report) "a dark picture of destruction" within a few hours. Guy Gibson was decorated with the Victoria Cross by King George VI, but he and a number of other survivors of the dambusting raid of 16th May 1943 were killed on later raids.



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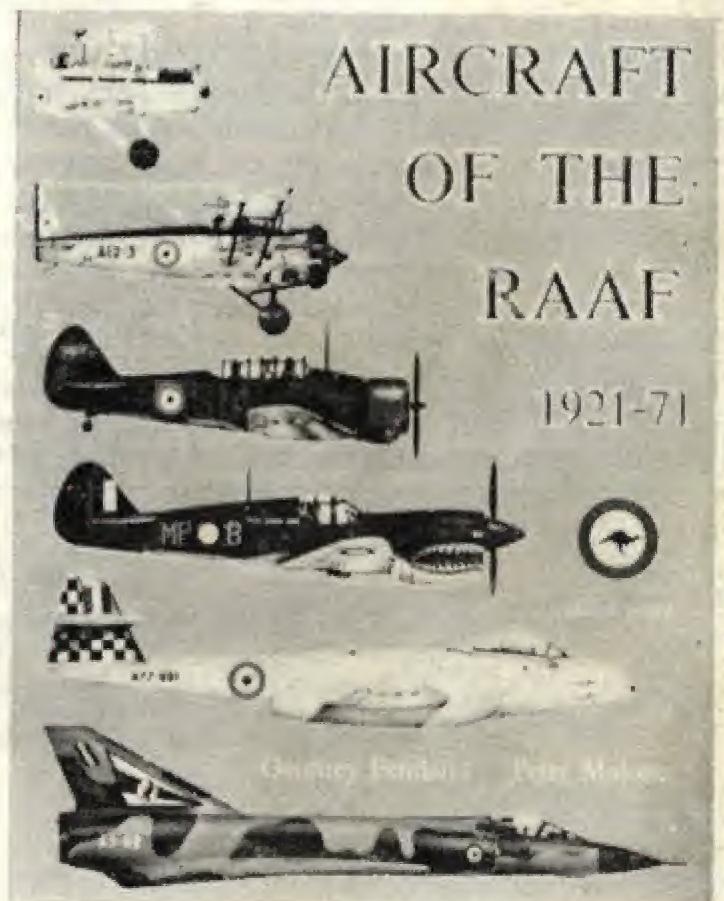
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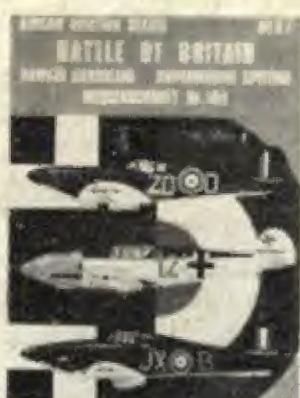
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